A TAXONOMIC REVIEW OF INDIAN SPECIES OF THE GENUS *LAIMYDORUS* SIDDIQI, 1969 (DORYLAIMIDA : NEMATODA)

DISSERTATION

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This is to certify that the entire research work presented in the dissertation entitled "A taxonomic review of Indian species of the genus *Laimydorus* Siddiqi, 1969 (Dorylaimida: Nematoda)" by Gunjan Bhardwaj is original and was carried out under my supervision. I have allowed Miss Gunjan to submit it to the Aligarh Muslim University, Aligarh in partial fulfilment of the requirement for the degree of Master of Philosophy in Zoology.

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CONTENTS

INTRODUCTION

Nematodes are the invertebrate roundworms that inhabit marine, freshwater as well as the terrestrial environments. They happen to be the most numerous multicellular animals on earth that even occur in habitats which seem uninhabitable, such as hot water springs, icebergs, deep oceanic trenches, low oxygen areas and acidic environments. The majority of nematodes are small sized, microscopic, averaging a millimeter in length, but some animal parasites are quite large such as *Placentonema giganticum*, the whale nematode parasite that attains nine meters length. Despite their grouping into separate feeding (trophic) groups, viz., herbivores, bacteriovores, fungivores, omnivores and predators, there is enormous biological diversity within each group with reference to their life cycle length, fecundity, longevity, life spans, response to environmental factors etc.

The dorylaim nematodes constitutes a very large group among the terrestrial forms and occur more frequently than other groups. They are unique in the sense that within the same group, they exhibit most of the feeding patterns (microbial feeders, hyphal feeders, plant parasites and predators) and is probably the reason for their wide occurrence and diversity. These nematodes are easily recognizable even at lower magnification by their apparently smooth cuticle, usually "dagger shaped" feeding apparatus, bottle shaped or bipartite pharynx and the absence of bursa in the males. They possess highly diversified feeding apparatus which reflects their varied feeding habits. Except a few genera, the feeding habits of majority of species are not known but could well be ascertained by studying the nature of their feeding apparatus. The members of superfamily Longidoroidea feed on the plant roots by their long, attenuated feeding apparatus while there are many which are considered suspected

plant parasites because their feeding apparatus seems quite appropriate for phytoparasitism (*Longidorella, Enchodelus, Californidorus* etc). A large number of species feed by predation, especially on other soil nematodes including tylenchids. Many species of the superfamily Dorylaimoidea, Nygolaimoidea and Actinolaimoidea are reported to be predatory (Thorne, 1930; Linford and Oliviera, 1937; Esser, 1963; Wyss and Grootaert, 1977). There are still others which feed on fungal/algal hyphae (*Tylencholaimus* and related genera).

The history of dorylaim nematodes dates back to 1845 when Dujardin proposed the genus *Dorylaimus* for his new species *Dorylaimus stagnalis*. De Man (1876) proposed the family Dorylaimidae for *Dorylaimus*, characterized by an axial odontostyle with distinct aperture, bipartite (bottle-shaped) pharynx, amphidelphic gonad, a distinct prerectum and males with ventrally arcuate spicules, lateral guiding pieces and ventromedian supplements. Orley (1880), De Man (1880), Cobb (1913, 1920) added several genera to this family. Filipjev (1927) initially recognized only a single subfamily Dorylaiminae under Dorylaimidae but later (1929) added three subfamilies viz., Alaiminae, Ironinae and Tylencholaiminae under this family. Thorne (1934) raised Dorylaimidae to the rank of a superfamily Dorylaimoidea while Pearse (1936) raised Dorylaimoidea to the rank of a suborderDorylaimina and placed it under Enoplida. Pearse (1942) gave full ordinal rank Dorylaimda to this group. Thorne and Swanger (1936) and Thorne (1939) in their two monumental monographs grouped dorylaims under five families, viz., Dorylaimidae, Leptonchidae, Diphtherophoridae, Alaimidae and Belondiridae and also described and illustrated numerous genera and species.

The genus *Dorylaimus* sensu Thorne & Swanger (1936) and Thorne (1939) was one of the most heterogeneous group among soil inhabiting nematodes with a very wide definition comprising species with continuous or offset lip region with or without labial sclerotization, monodelphic or amphidelphic gonad, long or short tail, and males with or without sexual dimorphism in tail shape. Altherr (1952-1963) and Meyl (1956-1961) further added several species to this paraphyletic genus which had already become rather a dumping ground for most of the forms representing the family Dorylaimidae.

Andrássy (1959) was the first to split this heterogeneous conglomerate of divergent forms into rather more restricted genera and proposed the genera *Mesodorylaimus, Eudorylaimus, Prodorylaimus* and *Thornenema* and transferred several species from *Dorylaimus* (sl) to these genera. Andrássy (1960) further proposed the genera *Amphidorylaimus, Meylonema, Thorneella* and *Lordellonema* to simplify the identification of this group which had become very difficult. At least four of the above genera, viz., *Mesodorylaimus* Andrássy, 1959; *Prodorylaimus* Andrássy, 1959, *Thornenema* Andrássy, 1959 and *Amphidorylaimus* Andrássy, 1960 have close resemblance with *Dorylaimus (*sensu st.) in the possession of a long tail in female and to some extent in the shape of lip region and odontostyle. Andrássy (l.c.) differentiated *Mesodorylaimus* from *Dorylaimus* in having comparatively smaller body size, single spear guiding ring as against "double" in *Dorylaimus*, transverse vulva, non-contiguous supplementary papillae and prerectum in male extending beyond the range of supplements, where as, the genus *Prodorylaimus* Andrássy, 1959 was erected for those species of *Dorylaimus* (sl) which do not show sexual

dimorphism in tail shape. *Amphidorylaimus* Andrássy, 1960 was erected close to *Prodorylaimus* but with strongly offset lip region with well developed lips and males with non-dorylaimoid spicules and only one ventromedian supplement. The genus *Thornenema* Andrássy, 1959 was distinctive in having labial and post labial sclerotization and mono-opisthodelphic gonad. Goodey (1963) recognized the taxonomic importance of the longitudinal ridges on the body surface and restricted the definition of *Dorylaimus* to those species possessing them. Consequently, he transferred all the non-ridged species of *Dorylaimus* to *Mesodorylaimus*. Andrássy (1964) proposed a further new genus *Afrodorylaimus* which is characterized by the male characters only (male tail conical, dorsally bent and sperms round-ended), while Jairajpuri (1966) established a new genus *Drepanodorylaimus*, characterized by the presence of a sinuate odontostyle, very gradual expansion of pharynx, amphidelphic gonad and long tail. Siddiqi (1969) erected the genus *Laimydorus* to accommodate those species of *Mesodorylaimus* Andrássy, 1959, possessing larger body size, numerous distinct body pores, "double" guiding ring, longitudinal vulva, males with numerous ventromedian supplements and the prerectum extending well beyond the range of supplements and transferred seventeen species from *Mesodorylaimus* to *Laimydorus*. Andrássy (1969) in his review of the family Dorylaimidae, proposed a new family Prodorylaimidae close to Dorylaimidae and five new genera, viz., *Prodorylaimium* under Prodorylaimidae and *Ischiodorylaimus, Calodorylaimus, Paradorylaimus* and *Idiodorylaimus* under Dorylaimidae. Loof (1985) reviewed the genus *Prodorylaimus* and transferred a number of species (in which males were not known) from *Laimydorus* Siddiqi, 1969 to *Prodorylaimus* and synonymised

Drepanodorylaimus Jairajpuri, 1966 with *Prodorylaimus*. Andrássy (1988) while reviewing the family Dorylaimidae added two further new genera, *Apodorylaimus* and *Protodorylaimus* to this group, recognized five subfamilies viz., Amphidorylaiminae, Prodorylaiminae, Dorylaiminae, Laimydorinae and Afrodorylaiminae under Dorylaimidae. He (l.c.) did not accept the synonymy of *Drepanodorylaimus* with *Prodorylaimus* and the proposed transfer of all the monosexual species of *Laimydorus* to *Prodorylaimus* as suggested by Loof (1985). Andrássy (1988) recognized twenty three valid species under *Laimydorus* and provided a key to the species. Loof and Coomans (1986) synonymized the genus *Paradorylaimus* Andrássy, 1969 because of the absence of longitudinal ridges and transferred its species to *Laimydorus*. Jairajpuri and Ahmad (1992) in their book on Dorylaimida accepted four subfamilies viz., Dorylaiminae, Laimydorinae, Thornenematinae and Arctidorylaiminae under Dorylaimidae. They (l.c.) did not accept the Loof's (1985) proposal of transferring all the monosexual species of *Laimydorus* to *Prodorylaimus* and the synonymy of *Drepanodorylaimus*, while accepted the synonymy of *Paradorylaimus* with *Laimydorus* as suggested by Loof & Coomans, (1986). Jairajpuri and Ahmad (1992) further synonymized *Chrysodorus* Jimenez-Guirado & Cadenas, 1985 with *Laimydorus* and provided a list of thirty six valid species under *Laimydorus*. Loof (1996) provided dichotomous and polyotomous keys for the females of *Prodorylaimus* – *Laimydorus* complex, synonymized the genus *Calodorylaimus* Andrássy, 1969 with *Laimydorus*, accepted the synonymy of *Paradorylaimus* Andrássy, 1969 and *Chrysodorus* Jimenez-Guirado & Cadenas,1985 with *Laimydorus* as earlier proposed by Loof & Coomans (1986) and Jairajpuri and

Ahmad (1992) respectively. He (l.c.) also synonymized the genera *Protodorylaimus* and *Apodorylaimus* with *Prodorylaimus*. Peña-Santiago *et al.* (1998) revalidated the genus *Protodorylaimus*.

The genus *Laimydorus* Siddiqi, 1969 constitute a monophyletic group of species with medium sized body (usually around 2-3 mm), continuous or slightly offset lip region, large odontostyle (about one and a half times the lip region width) with aperture about one-third of its length, guiding ring usually "double", rarely single, amphidelphic gonad, vulva usually longitudinal with distinct *pars refringens vaginae*, elongate conoid to long filiform tail, and prerectum in males extending much beyond the range of supplements. Siddiqi (1969) while proposing the genus designated *L. prolificus* (Thorne & Swanger, 1936) as the type species and listed (*L. agilis*, *L. centrocercus*, *L. conurus*, *L. crassoides*, *L. filiformis*, *L.flavoculatus*, *L.. luettichaui*, *L.. marinus*, *L. parabastiani*, *L. proximus*, *L.. pseudostagnalis*, *L. saprophilus*, *L. serpentinus*, *L. stenopygus*, *L. sylphus*, *L. tenuicaudatus*, *L. vixamictus*) species under it. Andrássy (1988) provided a list of twenty three valid species while Jairajpuri & Ahmad (1992) included thirty six species under this genus. Loof (1996) added six new species while in (1997) redescribed the type species, *L. prolificus* (Thorne & Swanger, 1936) Siddiqi, 1969 based on type population and several other populations and discussed its relationship with related species. Abebe & Coomans (1997), Ahmad & Ahmad (2002), Ahmad & Shaheen (2004), Gagarin *et al.* (2005), Baniyamuddin & Ahmad (2006), Mushtaq & Ahmad (2006) and Shahina *et al.* (2006) have further added species to this genus in recent years.

The genus *Laimydorus* has a world wide distribution. The members of this genus live predominantly in aquatic or semiaquatic biotypes. They have been recorded from all the five continents and of the presently eighty four known species have been recorded uptill now. Siddiqi (1969) stated that they feed either on plant or on other small invertebrates depending upon the availability of food. Very little information is known about their feeding behavior, biology and nature of parasitism etc.

Baqri and Jana (1982) was the first to record this genus from India and described two new species, viz., *Laimydorus baldus* and *L. siddiqii* from West Bengal and also provided a key to species. Jairajpuri and Ahmad (1983) described a new species *L. dhanachandi* from paddy fields in Goa, while Dey and Baqri (1986) added two new species, *L. distinctus* and *L. oryzae* from paddy fields in West Bengal. Baqri (1991) further added two new species, *L. minimus* and *L. coomansi* from citrus orchard in South Sikkim. Ahmad and Ahmad (2002) in a revisionary paper described three new species viz., *L. papillatus, L. mangalorensis* and *L. macrostylus* and redescribed *L. andrassyi* (Baqri & Jana, 1983) Loof, 1996; *L. conurus* (Thorne, 1939) Siddiqi, 1969; *L. siddiqii* Baqri & Jana, 1983 and *L. multialaeus* (Khera, 1970) Baqri, 1985 from Goa and Karnataka states. Loof (1996) while synonymizing the genus *Calodorylaimus* Andrássy, 1969 with *Laimydorus* transferred *C. indicus* (Ahmad & Jairajpuri, 1982), *C. andrassyi* (Baqri & Jana, 1983) and *C. simplex* (Baqri & Jana, 1983) to *Laimydorus*. Recently, Baniyamuddin and Ahmad (2006) described two new species, *L. cardiacus* and *L. vulvastriatus* from Arunachal Pradesh while Mushtaq and Ahmad (2006) added two new species viz., *L. parapapillatus* and *L.*

vulvapapillatus from Kashmir state. This makes a total of twenty seven species recorded/described so far from India.

During the course of present study, large number of samples were collected from different parts of India and processed for the isolation of nematode *Laimydorus*. The present work provides a revision of the Indian species of the genus *Laimydorus* and includes the study of all the species of the genus reported so far from India. A detailed note on the morphology of the genus is provided, followed by diagnoses of the family Dorylaimidae, the subfamily Laimydorinae and the genus *Laimydorus*, a complete list of nominal species and their synonymies are provided. Key to subfamilies and genera representing the family Dorylaimidae is also provided. A total of twenty seven species including two new described in the present work are recorded so far from India. Since it was out of scope of this dissertation to provide detailed descriptions of all the twenty seven species, only ten species viz., *L. conurus, L. siddiqii, L. andrassyi, L. uterinus, L. macrostylus, L. mangalorensis, L. cardiacus, L. parapapillatus, L. bomdillaensis, L. paraconurus* have been described in detail based on the study of type material as well as fresh material. This includes description of two new species also. The rest of the species are briefly described based on the study of type material (where ever possible) indicating their important diagnostic characters.

MATERIALS AND METHOD

Collection and Storage of Soil Samples

Soil samples 500 gm each from around the roots of field crops and forest trees were collected from various localities in India. The samples were taken from a depth of 5-15 cm with the help of a shovel and kept in polythene bags, which were tighten by rubber bands. All the relevant information such as host, locality, date of collection etc were noted. The samples were brought to the laboratory for further processing.

Processing of Soil Samples

To prevent the decomposition of organic component contained, the soil samples were immediately processed up on their arrival to laboratory. The soil sample were processed by Cobb's (1918) sieving and decantation and modified Bearman's funnel technique. The soil was placed in a bucket and thoroughly mixed with small amount of water. The debris and stones were removed and soil lumps, if present, were broken by hand. The bucket was filled with water to about $3/4^{th}$ of its volume and then the suspension was stirred gently by hand to make it homogeneous and left undisturbed for about 60 sec. to allow heavy particles to settle down at the bottom. The muddy suspension was then poured in to another bucket through a coarse sieve (2 mm pore size) which retained debris, roots and leaves. The suspension in the second bucket was then poured through a 300 mesh sieve (53 µm pore size). The nematodes and fine residue were retained on the sieve. The process was repeated thrice for better recovery of nematodes and the residue were collected in a beaker.

Isolation of Nematodes

The residue on the sieve was collected into the beaker and poured on a small coarse sieve lined with tissue paper. The sieve was then placed on a Baermann's funnel filled with water sufficient to touch the bottom of the sieve. During placement of sieve special attention was given to avoid trapping of air bubbles at the bottom of the sieve and water level. The stem of funnel is provided with rubber tubing with a stopper at its base. The nematodes migrated from the sieve into the clear water of the funnel and settled down in the stem of the funnel. After about 24 hours a small amount of water containing nematodes was drawn from the funnel through the rubber tubing into a cavity block and examined under the stereoscopic zoom microscope (SZX 12). Tentative identification, usually upto generic level was done at this stage itself.

Killing, Fixation and Dehydration

The collected nematodes in the cavity blocks were left undisturbed for a few minutes so as to allow them to settle. Excess water was removed with the help of a fine dropper and hot FA fixative (8 ml of 40% commercial formaldehyde + 90 ml distilled water + 2 ml glycerol) was poured into the nematode suspension in the cavity block. This simultaneously killed and fixed the nematodes. Twenty four hours after fixation the nematodes were transferred in a mixture of glycerine - alcohol (90 parts 30% alcohol + 5 parts glycerine) in a small cavity block which was kept in a desiccator containing anhydrous calcium chloride. In about 2-3 weeks the nematodes were dehydrated and ready to be mounted.

Mounting and Sealing

A drop of anhydrous glycerine was placed in the centre of glass slide and some specimens of nematodes were transferred from the cavity block to this drop with the help of a picking needle. Three pieces of the paraffin wax were placed around the glycerine drop. A cover slip was gently placed on the wax pieces and the slide was kept on a slide warming table, set out at 65°C for a second. As a result wax pieces starts melting and spreads over the surface of the slide allowing the cover glass to settle down except the area covered by the glycerine drop thus allowing the cover glass to stick with the glass slide holding the mounted specimens in the centre.

Measurements and Drawings

All measurements were made on specimen mounted in dehydrated glycerine by using the ocular micrometer. De Man's (1884) formula was used to denote the dimensions of the nematodes. Andrássy's (1998) formula was followed for the measurement of the pharyngeal glands. All diagrams were drawn using a drawing tube mounted on Nikon Optiphot 2 Microscope.

Type material

All type material has been labelled and deposited in nematode collection of the Department of Zoology, Aligarh Muslim University, Aligarh.

Abbreviations used in the Text

n =	number of specimens
L =	Total body length
a =	Body length / greatest body width
b =	Body length / total pharyngeal length
c =	Body length / tail length
c'=	Tail length / anal body diameter
V =	Distance of vulva from anterior end x 100 /body length
G_1 =	Length of anterior gonad x 100 / body length
G_2 =	Length of posterior gonad x 100 / body length
v-a =	Vulva-Anus distance
ABD =	Anal body diameter
D =	Position of dorsal pharyngeal gland nucleus from anterior end x total neck length / 100
AS1 =	Nucleus of the first gland of the first subventral pair of pharyngeal gland x 100 / glandularium
AS2 =	Nucleus of the second gland of the first subventral pair of pharyngeal gland x 100 / glandularium
PS1 =	Nucleus of the first gland of the second subventral pair of pharyngeal gland x 100 / glandularium
PS2 =	Nucleus of the second gland of the second subventral pair of pharyngeal gland x 100 / glandularium

*Glandularium is the length from dorsal pharyngeal gland to the base of pharynx

SYSTEMATICS

THE GENUS *LAIMYDORUS* SIDDIQI, 1969

Systematic position

Class.....Nematoda

Subclass.....Adenophorea (von Linstow, 1905) Chitwood, 1958

Order.....Dorylaimida (De Man, 1876) Pearse, 1942

Suborder.....Dorylaimina (De Man, 1876) Pearse, 1942

Superfamily....Dorylaimoidea (De Man, 1876) Thorne, 1934

Family.....Dorylaimidae De Man, 1876

Subfamily... Laimydorinae Andrássy, 1969

Genus..... *Laimydorus* Siddiqi, 1969

Family Dorylaimidae De Man, 1876

= Prodorylaimidae Andrássy, 1969
= Thornenematidae Siddiqi, 1969
= Arctidorylaimidae Mulvey & Anderson, 1979

Diagnosis: Cuticle with fine transverse striae, rarely with distinct longitudinal ridges. Odontostyle with wide lumen and aperture. Odontophore rod like, lacking basal knobs or flanges. Guiding ring single or "double". Expanded part of pharynx one-third to half of the pharyngeal length. Female genital system amphidelphic, rarely mono-opisthodelphic. Ventromedian supplements few to numerous, spaced or contiguous or grouped. Tail similar or dissimilar in sexes.

Type subfamily: Dorylaiminae De Man, 1876

Other subfamilies

Laimydorinae Andrássy, 1969

Thornenematinae Siddiqi, 1969

Amphidorylaiminae Andrássy, 1976

Arctidorylaiminae Mulvey & Anderson, 1979

Key to subfamilies of Dorylaimidae

1. Cuticle with longitudinal ridges 2

   Cuticle without longitudinal ridges 3

2. Tail similar in sexes, elongate conoid ..... Arctidorylaiminae

   Tail dissimilar in sexes, elongate-conoid to filiform in females and short, bluntly conoid in males ..... Dorylaiminae

3. Spicules simple, not truly dorylaimoid, without central thickening and lateral pieces ..... Amphidorylaiminae

   Spicules typical dorylaimoid, with central thickening and lateral pieces 4

4. Vestibule provided with minute to strongly developed sclerotized plates; S2N located much anterior to pharyngeal base ..... Thornenematinae

- Vestibule not provided with sclerotized plates, S2N towards pharyngeal base ..... Laimydorinae

Subfamily Laimydorinae Andrássy, 1969

= Afrodorylaminae Andrássy, 1969
= Mesodorylaiminae Andrássy, 1969
= Prodorylaiminae Andrássy, 1969

Diagnosis: Cuticle without longitudinal ridges. Odontostyle with wide lumen and aperture. Odontophore rod-like. Guiding ring single or 'double'. Expanded part of pharynx about one-half pharyngeal length. Dorsal pharyngeal gland close to the beginning of pharyngeal enlargement; first pair of subventral distinctly apart, near

middle of glandularium; second pair close to each other, near base of glandularium. Vulva transverse or longitudinal. Female genital system amphidelphic. Ventromedian supplements contiguous or spaced. Tail either similiar or dissimilar in sexes.

Type genus: *Laimydorus* Siddqi, 1969

Other genera:

Mesodorylaimus Andrássy, 1959
Prodorylaimus Andrássy, 1959
Afrodorylaimus Andrássy, 1964
Drepanodorylaimus Jairajpuri, 1966
Idiodorylaimus Andrássy, 1969
Fuscheila Siddiqi, 1982
Calcaridorylaimus Andrássy, 1986
Miodorylaimus Andrássy, 1986
Crocodorylaimus Andrássy, 1988
Protodorylaimus Andrássy, 1988
Halodorylaimus Andrássy, 1988
Namaquanema Heyns & Swat, 1993
Kunjudorylaimus Dhanam & Jairajpuri, 2000
Baladorylaimus Andrássy, 2001

Key to Genera of Laimydorinae

1. Cheilorhabdions strongly sclerotized ..... *Fuscheila*
   Cheilorhabdions not sclerotized 2
2. Tail similar in sexes 3
   Tail dissimilar in sexes 6
3. Odontostyle with hooked basal processes ..... *Namaquanema*
   Odontostyle without hooked basal processes 4
4. Lip region rounded; amphids bilobed ..... *Kunjudorylaimus*
   Lip region truncate; amphids not bilobed 5

5. Body very slender (a = 64-81); prerectum in both sexes excessively long (15-25 anal body diameters) ..... *Protodorylaimus*
   Body not so slender; prerectum much shorter (in females to 4 and in males to 8 anal body diameters) ..... *Prodorylaimus*
6. Conspicuous yellowish spots present around the basis of odontostyle; male tail with ventral blister ..... *Crocodorylaimus*
   No yellowish spots around the basis of odontostyole; male tail without ventral blister 7
7. Guiding ring sclerotized, 'double'; prerectum in male beginning well in front of supplements 8
   Guiding ring not sclerotized, single or weakly 'double'; prerectum in males short, usually beginning within range of supplements 9
8. Sub-cuticle with coarse striations or annulations .....
   ..... *Idiodorylaimus*
   Sub-cuticle without coarse striations or annulations ..... ***Laimydorus***
9. Male tail with terminal peg ..... *Baladorylaimus*
   Male tail without terminal peg 10
10. Male tail with rounded terminus 11
    Male tail with pointed terminus ..... *Afrodorylaimus*
11. Odontostyle asymmetrical; two parts of pharynx not clearly demarcated .....
    ..... *Drepandorylaimus*
    Odontostyle symmetrical; two parts of pharynx clearly demarcated 12
12. Amphid aperture smaller than usual, only 1/8-1/6 of corresponding body width..
    ..... *Halodorylaimus*
    Amphid aperture normal, 1/3-1/2 of corresponding body width 13
13. Cuticle thin; vulva not sclerotized; spicules comparatively weak; prerectum extending much beyond range of supplements ..... *Miodorylaimus*
    Cuticle thick; vulva sclerotized; spicules well developed; prerectum beginning within range of supplements or slightly anterior to them 14

14. Spicules large, with double contour on dorsal side and spur near tip; supplements very small ..... *Calcaridorylaimus*
    Spicules without double contour on dorsal side and spur near tip absent; supplement well developed..... *Mesodorylaimus*

Genus *Laimydorus* Siddiqi, 1969

= *Calodorylaimus* Andrássy, 1969

Diagnosis: Medium to large sized nematodes (usually over 2 mm long to 5.6 mm). Cuticle smooth, moderately thick, with exceedingly fine transverse striae, lacking ridges or punctuations, sometimes with scattered radial striae. Lateral body pores distinct, usually numerous; series of ventral and dorsal body pores may also be present. Lip region continuous or offset; lips amalgamated, with distinct papillae. Amphids well developed with stirrup shaped fovea and large aperture with large sensillar pouches located behind. Guiding ring sclerotized, "double" located in general about one-head diameter from anterior end. Odontostyle massive with a wide lumen and aperture about 1/3rd of its length, varying in length, 17-62 µm or 1.2-2.0 times as long as cephalic diameter. Odontophore simple, rod-like. Pharynx very muscular, gradually enlarging near middle. The openings of the posterior subventral pharyngeal glands are close together, some distance from the base of pharynx while the opening of the two anterior subventrals are at some distance from each other near the pharyngeal enlargement and the opening of the dorsal gland is at its anterior end. Cardia large, digitate. Female reproductive system didelphic amphidelphic. Vulva longitudinal, rarely transverse. Ovaries paired, large, elongate, with numerous oocytes; eggs comparatively small, more than one per uterus at a time. Prerectum well developed, in females 4-12 times as long as anal body diameter, in males

originating well before the region of the supplements. Testes two, spermatozoa fusiform. Ventromedian supplements numerous, contiguous, the middle ones may be slightly spaced. Spicules long, dorylaimoid, with well developed lateral guiding pieces. Tail attenuated to long, filiform, 2-14 times as long as anal body diameter in females and short, conoid to rounded in males. End of male tail having numerous sub-ventral pores.

Type species: *Laimydorus prolificus* (Thorne & Swanger, 1936) Siddiqi, 1969
= *Dorylaimus prolificus* Thorne & Swanger, 1936
= *Mesodorylaimus prolificus* (Thorne & Swanger, 1936) Goodey, 1963

Other species:
L. acris (Thorne, 1939) Andrássy, 1969
= *Dorylaimus acris* Thorne, 1939
= *Mesodorylaimus acris* (Thorne, 1939) Goodey, 1963
= *Prodorylaimus acris* (Thorne, 1939) Loof, 1985
L. afer (Andrássy, 1964) Andrássy, 1986
= *Eudorylaimus afer* Andrássy, 1964
L. africanus Botha & Heyns, 1993
L. andrassyi (Baqri & Jana, 1982) Loof, 1996*
= *Calodorylaimus andrassyi* Baqri & Jana,1982
L. agilis (De Man, 1880) Siddiqi, 1969
= *Dorylaimus agilis* De Man, 1880
= *Mesodorylaimus agilis* (De Man, 1880) Goodey, 1963
L. aquatilis (Skwarra, 1921) Andrássy, 1988
= *Dorylaimus aquatilis* Skwarra, 1921
L. baldus Baqri & Jana, 1982*
L. bomdillaensis sp. n.*
L. bongersi Loof, 1996
L. callosus (Skwarra, 1921) Andrássy, 1969
= *Dorylaimus callosus* Skwarra, 1921
= *Mesodorylaimus callosus* (Skwarra, 1921) Goodey, 1963
L. cardiacus Baniyamuddin & Ahmad, 2006*
L. chassanicus (Alekseev & Naumova, 1977) Loof, 1996
= *Dorylaimus chassanicus* Alekseev & Naumova, 1977
= *Calodorylaimus chassanicus* (Alekseev & Naumova, 1977) Andrássy, 1988
L. constrictus Loof, 1996
L. conurus (Thorne, 1939) Siddiqi, 1969*
= *Dorylaimus conurus* Thorne, 1939
L. coomansi Baqri, 1991*

L. coroniceps Loof, 1996
L. crassoides (Jagerskiold, 1908) Siddiqi, 1969
= *Dorylaimus crassoides* Jagerskiold, 1908
= *Mesodorylaimus crassoides* (Jagerskiold, 1908) Goodey, 1963
L. crassus (De Man, 1884) Thorne, 1974
= *Dorylaimus crassus* De Man, 1884
= *Mesodorylaimus crassus* (De Man, 1884) Goodey, 1963
L. cryptosperma (Loof, 1969) Baqri & Coomans, 1973
= *Mesodorylaimus crassus* (De Man, 1884) Goodey, 1963
= *Mesodorylaimus cryptosperma* Loof, 1969
= *Dorylaimus agilis* apud Thorne & Swanger, 1936 nec De Man, 1880
L. dadayi (Thorne & Swanger, 1936) Andrássy, 1969
= *Dorylaimus dadayi* Thorne and Swanger, 1936
= *Dorylaimus pusillus* Daday, 1905 nec Cobb, 1893
L. densus (Andrassy, 1988) Loof, 1996*
= *Calodorylaimus densus* Andrássy, 1988
L. dhanachandi Jairajpuri & Ahmad, 1983*
= *Chrysodorus dhanachandi* (Jairajpuri & Ahmad, 1983) Jimenez-Guirado & Cadenas, 1985
L. distinctus Dey & Baqri, 1986*
L. doryuris (Ditlevsen, 1911) Andrássy, 1986
= *Dorylaimus doryuris* Ditlevsen, 1911
= *Eudorylaimus doryuris* (Ditlevsen, 1911) Andrássy, 1959
L. effilatus (Schuurmans-Stekhoven & Tenunissen, 1938) Andrássy, 1969
= *Dorylaimus effilatus* Schuurmans-Stekhoven & Tenunissen, 1938
= *Mesodorylaimus effilatus* (Sch. Stekhoven & Tenunissen, 1938) Goodey, 1963
L. elephas Andrássy, 1988
= *Dorylaimus callosus* Thorne & Swanger, 1936
L. esquiveli Ahmad & Shaheen, 2004
L. finalis Thorne, 1975*
= *Dorylaimus finalis* (Thorne, 1975) Loof, 1985
L. flexus (Thorne & Swanger, 1936) Loof, 1996
L. flevensis Loof, 1996
L. gaussi (Steiner, 1916) Andrássy, 1986
= *Dorylaimus gaussi* Steiner, 1916
= *Mesodorylaimus gaussi* (Steiner, 1916) Goodey, 1963
L. gazella Andrássy, 1970
L. gravidus (Andrassy, 1986) Loof, 1996
= *Calodorylaimus gravidus* Andrássy, 1986
L. incae (Steiner, 1920) Andrássy, 1986
= *Dorylaimus incae* Steiner, 1920
= *Mesodorylaimus incae* (Steiner, 1920) Goodey, 1963
L. indicus (Ahmad & Jairajpuri, 1982) Loof, 1996*
= *Calodorylaimus indicus* Ahmad & Jairajpuri, 1982
L. insignis (Gagarin, 1981) Loof, 1985
= *Drepanodorylaimus insignis* Gagarin, 1981

= *Halodorylaimus insignis* (Gagarin, 1981) Andrássy, 1988

L. jankowskyi (Tsalolikhin, 1977) Loof, 1996

= *Mesodorylaimus jankowskyi* (Tsalolikhin, 1977) Andrássy, 1988

= *Paradorylaimus jankowskyi* Tsalolikhin, 1977

L. keilini (Lee, 1961) Andrássy, 1986

= *Dorylaimus keilini* Lee, 1961

= *Mesodorylaimus keilini* (Lee, 1961) Andrássy, 1969

L. kherai Baqri, 1985*

= *Eudorylaimus odhneri* partim apud Khera, 1970

L. longicaudatus (Jimenez-Guirado & Cadenas, 1985) Jairajpuri & Ahmad, 1992

= *Chrysodorus longicaudatus* Jimenez-Guirado & Cadenas, 1985

L. lordelloi (Meyl, 1957) Loof, 1996

= *Chrysodorus lordelloi* (Meyl, 1957) Jimenez-Guirado & Cadenas, 1985

= *Dorylaimus lordelloi* Meyl, 1957

= *Mesodorylaimus lordelloi* (Meyl, 1957) Andrássy, 1957

= *Paradorylaimus lordelloi* (Meyl, 1957) Andrássy, 1957

= *Drepanodorylaimus lordelloi* (Meyl, 1957) Jairajpuri & Ahmad, 1992

L. luettichaui (Meyl, 1957) Siddiqi, 1969

= *Chrysonema luettichaui* Meyl, 1957

L. macrostylus Ahmad & Ahmad, 2001*

L. mangalorensis Ahmad & Ahmad, 2001*

L. massachussetsensis Loof, 1996

= *Dorylaimus marinus* in Thorne & Swanger, 1936

L. merogaster (Steiner, 1916) Loof, 1996

= *Dorylaimus merogaster* Steiner, 1916

= *Mesodorylaimus merogaster* (Steiner, 1916) Goodey, 1963

L. microamphis Chesunov, 1985

L. minimus Baqri, 1991*

L. mongolicus (Andrássy, 1988) Loof, 1996

= *Dorylaimus montanus* in Tsalolikhin, 1985

= *Calodorylaimus mongolicus* Andrássy, 1988

L. multialeus (Khera, 1970) Baqri, 1985*

= *Dorylaimus multialeus* Khera, 1970

L. octo (Andrássy, 1969) Loof, 1996

= *Calodorylaimus octo* Andrássy, 1988

L. oryzae Dey & Baqri, 1986*

L.oxurus Gagarin & Thanh, 2005

L. papillatus Ahmad & Ahmad, 2001*

L. parabastiani (Paetzold, 1958) Siddiqi, 1969

= *Dorylaimus parabastiani* Paetzold, 1958

L. paraconurus sp. n.*

L. parafecundus (De Coninck, 1935) Loof & Coomans, 1986

= *Dorylaimus parafecundus* De Coninck, 1935

= *Paradorylaimus parafecundus* (De Coninck, 1935) Andrássy, 1969

= *Drepanodorylaimus parafecundus* (De Coninck, 1935) Jairajpuri & Ahmad, 1992

L. paraincae Thorne, 1974
L. parapapillatus Mushtaq & Ahmad, 2006*
L. parhomalopapillatus (Schuurmans-Stekhoven, 1944) Andrássy, 1969
= *Dorylaimus parhomalopapillatus* Schuurmans-Stekhoven, 1944
= *Calodorylaimus parhomalopapillatus* (Sch. Stekhoven, 1944) Baqri & Coomans, 1973
L. pinguis Andrássy, 1988
= *Dorylaimus crassus* in Thorne & Swanger, 1936
L. prolificus (Thorne & Swanger, 1936) Siddiqi, 1969
= *Dorylaimus prolificus* Thorne & Swanger, 1936
= *Mesodorylaimus prolificus* (Thorne & Swanger, 1936) Goodey, 1963
L. proximus (Thorne & Swanger, 1936) Siddiqi, 1969
= *Dorylaimus proximus* Thorne & Swanger, 1936
= *Mesodorylaimus proximus* (Thorne & Swanger, 1936) Goodey, 1963
L. pseudostagnalis (Micoletzky, 1927) Siddiqi, 1969*
= *Dorylaimus pseudostagnalis* Micoletzky, 1927
= *Mesodorylaimus pseudostagnalis* (Micoletzky, 1927) Goodey, 1963
= *Dorylaimus imamurai* Thorne & Swanger, 1936
= *Dorylaimus selangorensis* De Man, 1929
L. renwicki (van der Linde, 1938) Loof, 1996
L. reversus Thorne, 1974
L. ritae Abebe & Coomans, 1997
L. serpentinus (Thorne & Swanger, 1936) Siddiqi, 1969
= *Dorylaimus serpentinus* Thorne & Swanger, 1936
= *Mesodorylaimus serpentinus* (Thorne & Swanger, 1936) Goodey, 1963
= *Prodorylaimus serpentinus* (Thorne & Swanger, 1936) Loof, 1985
L. siddiqii Baqri & Jana, 1982*
L. simplex (Baqri & Jana, 1982) Loof, 1996*
= *Calodorylaimus simplex* Baqri & Jana, 1982
=*L. olifanti* Botha & Heyns, 1991
L. stenopygus Andrássy, 1968
= *Dorylaimus stenopygus* Andrássy, 1968
L. sylphus (Thorne, 1939) Siddiqi, 1969
L. tenuicaudatus (Bastian, 1865) Goodey, 1963
= *Dorylaimus tenuicaudatus* Bastian, 1865
= *Mesodorylaimus tenuicaudatus* (Bastian, 1865) Goodey, 1963
L. tenuistriatus (Schneider, 1935) Loof & Coomans, 1986
= *Dorylaimus tenuistriatus* Schneider, 1935
= *Paradorylaimus tenuistriatus* (Schneider, 1935) Andrássy, 1969
= *Drepanodorylaimus tenuistriatus* (Schneider, 1935) Jairajpuri & Ahmad, 1992
L. thornei Andrássy, 1969
= *Prodorylaimus thornei* (Andrássy, 1969) Loof, 1985
= *Dorylaimus filicaudatus nec* Daday, 1905 apud Thorne & Swanger, 1936
L. tropicus Ahmad & Shaheen, 2004
L. unipapillatus (Daday, 1905) Andrássy, 1969
= *Dorylaimus unipapillatus* Daday, 1905

= *Mesodorylaimus unipapillatus* (Daday, 1905) Goodey, 1963
= *Dorylaimus merogaster* Steiner, 1916

L. uterinus Loof, 1996*

L. vacillans Loof, 1996

L. viximictus (Andrássy, 1962) Siddiqi, 1969
= *Dorylaimus viximictus* Andrássy, 1962
=*Prodorylaimus viximictus* (Andrássy, 1962) Loof, 1985

L. vulvapapillatus Mushtaq & Ahmad, 2006*

L. vulvastriatus Baniyamuddin & Ahmad, 2006*

L. wasimi (Bohra & Baqri, 2003) comb. n.*
= *Calodorylaimus wasimi* Bohra & Baqri, 2003

L. wirsi Shahina, Tabassum & Nasira, 2006

*** species recorded from India**

Species inquirendae:

1. *L. fecundus* (Cobb, 1914) Andrássy,1986
   = *Dorylaimus fecundus* Cobb, 1914
   = *Mesodorylaimus fecundus* (Cobb, 1914) Goodey, 1963
2. *L. filiformis* (Bastian,1865) Siddiqi, 1969
   = *Dorylaimus filiformis* Bastian, 1865
   = *Mesodorylaimus filiformis* (Bastian, 1865) Goodey, 1963
   = *Paradorylaimus filiformis* (Bastian, 1865) Andrássy, 1969
   = *Chrysodorus filiformis* (Bastian, 1865) Andrássy, 1988
3. *L. halophilus* (Daday,1897) Andrássy,1969
   = *Dorylaimus halophilus* Daday, 1897
4. *L. marinus* (Dujardin,1844) Siddiqi, 1969
   = *Dorylaimus marinus* Dujardin, 1844
   = *Mesodorylaimus marinus* (Dujardin, 1844) Andrássy, 1959
5. *L. mongolicus* (Andrássy, 1988) Loof, 1996
   = *Dorylaimus montanus* in Tsalolikhin, 1985
   = *Calodorylaimus mongolicus* Andrássy, 1988
6. *L. saprophilus* (Peters, 1930) Siddiqi, 1969
   = *Dorylaimus saprophilus* Peters, 1930
   = *Mesodorylaimus saprophilus* (Peters, 1930) Goodey, 1963

MORPHOLOGY OF THE GENUS

Body shape and size: When killed with hot fixative they assume ventrally curved or C-shaped postures. The body is cylindrical tapering slightly towards extremities, its size ranges from 1.3 mm (*L. minimus*) to 6.4 mm (*L distinctus*). Both the sexes are similar in morphology, except for the posterior region of male which is more strongly ventrally curved because of the presence of strong copulatory muscles, and the sexual dimorphism in tail shape, being elongate to filiform in females and short conoid in males.

Cuticle: The cuticle is usually marked with fine transverse striations Radial striations have also been seen in the tail region of some species (*L parapapillatus, L vulvapapillatus*). The thickness of cuticle varies at different regions of the body, usually 1-4 µm at mid body (*L multialeus, L coroniceps, L oryzae*) and 7-8 µm (*L minimus, L. coomansi, L. vulvapapillatus*) at tail. The lateral chords are granular, narrow, about one-third (*L tropicus, L bongersi, L flevensis, L dhanachandi*) to one-seventh (*L. coroniceps, L minimus*) as wide as body width near midbody Body pores are indistinct in majority of species, however, rarely they are very distinct (*L baldus, L. siddiqii, L. parapapillatus*). In *L papillatus* both dorsal and ventral body pores are well developed, ending into distinct papillae.

Lip region: The lip region is usually off set by slight depression (*L indicus, L densus, L vacillans, L. parapapillatus*), but may be either continuous (*L bongersi, L lordelloi, L indicus*) or distinctly set of by a constriction (*L distinctus, L andrassyi, L. coroniceps, L. oryzae*). The contour of the lip region may be angular (*L flevensis, L. coroniceps*) or rounded (*L. jankowskyi, L gazella*). Lip region bears six lips of equal sizes, they may be separated with well developed protruding sensilla, giving the

lips angular contours, or amalgamated partly with protruding sensilla (*L. vacillans*). The lips may appear completely fused, with rounded contour without protruding papilla (*L. uterinus, L. bongersi*). Each lip bear a papilla on the inner as well as the outer circlets. The submedian lips have an additional papillae in the outer circlet, making a total of 16 papillae (6+10 arrangement in two circlet).

Amphids: The amphids are well developed, stirrup-shaped (*L. distinctus, L. uterinus, L. andrassyi*) or cup-shaped (*L. parapapillatus, L. vulvapapillatus*), usually with slit-like aperture, rarely the apertures appears bilobed (*L. indicus, L. octo*), about half to two-thirds of the corresponding body diameter wide. The amphidial pouch is followed by canalis amphidialis which leads to the sensillar pouch. The sensillae inside the pouches are supposed to be the chemoreceptors.

Feeding apparatus: The feeding apparatus consists of an odontostyle, odontophore, guiding sheath and guiding ring. The odontostyle is usually straight (*L. coroniceps, L. prolificus, L. proximus*), rarely slightly sinuate (*L. vacillans, L. cardiacus*). It is usually massive with wide lumen and aperture about one-third of its length, rarely it may be slender (*L. conurus*) to very slender (*L. dhanachandi*). The junction of odontostyle and odontophore is simple. The length of odontostyle ranges from 17-19 µm (*L. conurus*) to 60-62 µm (*L. merogaster, L. distinctus*), but in majority of species, it is in the range of 25-35 µm. The length of odontostyle is one of the most important taxonomic characters in this genus. The odontophore or spear extension is simple, rod-like. The length of odontophore ranges from 22.5-24.5 µm (*L. tropicus*) to 65-66 µm (*L. distinctus*). In majority of species the length of odontophore is greater than that of odontostyle, however, in few species odontophore

may be shorter than the odontostyle (*L. esquiveli, L tropicus, L. vulvastriatus, L cardiacus*). The guiding apparatus consists of a fixed guiding ring and a thin memberanous guiding sheath which ends near the base of odontostyle. The fixed ring is present near the middle of odontostyle and is usually "double" in majority of species (*L. prolificus, L. dhanachandi, L. conurus, L. coomansi, L. simplex, L siddiqii*), however it may be single in few (*L. bongersi, L. octo, L. baldus, L flevensis)*. The nature of guiding ring as well as its position is of taxonomic importance.

Pharynx: The pharynx is divisible into an anterior slender part and a posterior expanded part. The nerve ring surrounds the anterior slender part of pharynx at about 30-35% of neck length from the anterior end. The expanded part of pharynx has a tripartite lumen and holds five glands, one dorsal and two pair of subventrals. All these glands open into the lumen of pharynx near the placement. The dorsal gland and its nucleus is always well developed and lies near the anterior end of expanded part. The first pair of subventrals are distinctly apart and have comparatively smaller nucleus compared to second pair which is closely set near the posterior end of pharynx The position of gland nuclei and their orifices are important taxonomically.

Cardia: Cardia is well developed, enveloped by the intestinal tissues and hangs in the intestinal lumen. It is variously shaped, usually elongate-conoid (*L. indicus, L conurus, L. macrostylus*), dome-shaped (*L. bongersi*), short rounded (*L dhanachandi, L. coomansi*), or short-conoid *(L. constrictus, L. esquiveli*). Cardia may be enlarged with an anterior hemispherical portion followed by an elongate-conical posterior part (*L. cardiacus*).

Intestine: The intestine is sac-like, consisting of six cells in circumference. Granules of various sizes and colour are present in it.

Prerectum: Prerectum is separated from the intestine by a constriction. Though the cells of prerectum are similar to intestine, still the two portions can easily be differentiated by the nature of granulation. The length of prerectum is usually 4-6 times the anal body diameters, but exceptionally it may be as long as 10-13 anal body diameters (*L. andrassyi, L. oryzae*). It may even be very short, about 2.0-2.4 anal body diameters (*L. esquiveli*). The length of prerectum in relation to anal body diameter is an important taxonomic character. In males the prerectum is much longer and usually extends much beyond the range of supplements. However, in some species (*L. vulvastriatus, L. vacillans, L. renwicki, L. esquiveli*) it terminates within the range of supplements or utmost at the level of proximal supplement. This is one of the most important taxonomic character in this genus and has been quite often used in species delimitation.

Rectum: The rectum is dorsoventrally flattened, separated from the prerectum by a constriction. It is usually about one to one and a half times anal body diameter long and open to the exterior through a crescentic anal/cloacal opening.

Female Genital System: In all the species of *Laimydorus* reported so far, the females are didelphic amphidelphic. Each sexual branch consists of an ovary, oviduct and uterus, and a common vagina and vulva.

Ovary: The ovary is reflexed lying dorsally or ventrally to the oviduct. It consists of two zones, the distal germinal zone and the proximal growth zone. In the germinal zone, the cells are small, restricted to the apical part where the proliferation of cells

takes place (telogony). In the growth zone, the oocytes are arranged in a single row increasing in size towards the proximal end of the ovary. Due to the subterminal connection between the ovary and oviduct, the pxoximal part of the latter forms a blind sac. The ripe oocytes grow in size in this region until they reach their full size. After maturation they are passed to the oviduct.

Oviduct: The oviduct consists of a distal narrow tube with high columnar epithelium surrounded by a connective tissue and an enlarged proximal part, the *pars dilatata* with low columnar epithelium. The proximal part is irregular in outline and may contain ova. It is quite flexible and may serve as spermatheca. The oviduct is very short, its junction with uterus lying about the middle of ovaries (*L. uterinus*).

Sphincter: Usually the oviduct and uterus are separated by a well developed sphincter. The sphincter is more prominent in species (*L. multialeus, L. coroniceps, L cardiacus*), whereas it is indistinct in *L. indicus, L. macrostylus*.

Uterus: The uterus is the most variable part of the female reproductive organ. Usually it consists of a pxoximal and distal part. The proximal part consists of a single layer of columnar cell surrounded by a muscular layer. The distal part is narrow and highly muscular. The eggs are usually present in the proximal part of the uterus where they are coated with a shell. The proximal parts of the two uteri join to form an ovijector. In some species, this region may be completely filled with sperm (*L. coroniceps, L. flevensis*). Uterus is extremely long about five times longer than the oviduct (*L. coomansi, L. flevensis*). Uterus is very well developed in *L uterinus*. In this species the uteri are very long, filled with sperm, with well developed *pars musculosa* and its junction with oviduct lies at level with the middle of ovaries. *Pars*

musculosa is also well developed in *L. luettichaui.* Uterus is very well developed with Z-differentiation at its middle (*L. parapapillatus, L. vulvapapillatus*).

Vagina: The vagina extends to about one-third or half of the corresponding body width. Its lumen is narrow and usually at its proximal end it may be surrounded by the cuticularization and at the distal end by the sphincter muscles. In some species the sphincter muscles are not visible. The vagina is divisible into three distinct regions; *pars distalis,, pars refringens* and *pars proximalis vaginae. Pars distalis* vaginae is very short (*L. bongersi, L. tropicus, L. constrictus*) with curved walls (*L. vulvastriatus, L. cardiacus*) or with straight walls (*L. siddiqii, L. indicus*) or with rounded walls (*L. oxurus*) or it may be absent (*L. coroniceps, L. uterinus, L. flevensis*). *Pars refringens vaginae* varies in shape and size and is of high diagnostic value. It may be drop-shaped (*L. constrictus*), oval oblique oriented pieces (*L bongersi*), oblique trapezoid pieces (*L. uterinus, L. cardiacus, L. coroniceps*), or triangular pieces (*L. flevensis, L. cardiacus*) or sometimes an intermediate area is present between the two pieces (*L. cardiacus, L. esquiveli, L. vulvastriatus*). The *pars refrengens vaginae* may be provided with four sclerotised pieces, the outer two triangular and strongly sclerotised and the middle two almost rectangular and weakly sclerotised (*L. parapapillatus*), or the outer two drop-shaped pieces with middle two almost rectangular (*L. vulvapapillatus*). *Pars proximalis vaginae* is with straight walls (*L. parapapillatus, L. cardiacus L. vulvastriatus, L. esquiveli*) or with convex walls (*L. vacillans, L. bondersi, L. multialaeus, L. uterinus)* encircled by the circular musculature.

Vulva: The vulva in most of the *Laimydorus* species in principle is a midventral longitudinal slit, however, in some species it may be a transverse slit (*L. coroniceps, L. tropicus, L. indicus, L. simplex*). The slit is formed by the invagination of the body cuticle and is controlled by the vulval muscles. *Dilatator vulvae* are clearly visible in some species. A pair of vulval papillae (*L. papillatus, L. vulvapapillatus*) or advulval cuticular ornamentation may be present both anterior and posterior to vulva *(L. vulvastriatus),* sometimes the pores as deep as thickness of cuticle (*L. vulvapapillatus*) or large advulvar ventral pores resembling invagination may be present (*L. flevensis*). Vulva is pre-equatorial (*L. longicaudatus, L. octo L. merogaster, L. luettichaui*), equatorial (*L. andrassyi, L. indicus, L. parafecundus, L. proximus, L. multialaeus*) or post-equatorial *(L. vacillans, L. lordelloi, L. reversus, L. dadayi, L. gazella*). In addition to the shape of vulva, its position and the nature of vaginal sclerotization are very important characters in the identification of species.

Male Genital System: The males are diorchic, consisting of two testes lying opposite each other, a common vas deferens leading to ejaculatory duct which opens into cloaca. The testes are almost equally developed and resemble a thin-walled pouch covered with epithelial layer, which is more prominent at the proximal end and extremely thin towards the distal end (tip of testes). Two zones can be differentiated in each testis, a proximal germinal part and a distal growth part. The maturation of sperm takes place at the end of growth part. The vas deferens is made up of a tubular and a glandular region and is differentiated into an anerior slender and a posterior ejaculatory duct. The cloaca is lined with cuticle and opens to the exterior through the cloacal aperture. Besides the primary sex organs as described above, the males are

also provided with accessory structures which consists of spicules, lateral guiding pieces, ventromedian supplements and copulatory muscles.

Spicules: The paired spicules are similar in shape and size. These are stout, heavily sclerotized, bluntly tipped and are usually ventrally curved. Each spicule consists of a head or a capitulum and a lamina. The length of spicule varies from 33-35 μm (*L. conurus*) to 110 μm (*L. distinctus*). During action each spicule is guided by a set of protractor and retractor muscles. Two lateral guiding pieces, present on the distal end of spicules taper distally and strengthen the spicules during copulation. They are rod-like structures varying from 8-9 μm (*L. simplex*) to 20-22 μm (*L coroniceps*).

Supplements: The supplement consist of an adanal pair and a variable number of ventromedian, spaced regularly (*L. baldus, L. dhanachandi, L multialeus*) or irregularly (*L. andrassyi, L. indicus*). The latter may vary from 7-12 (*L. lordelloi, L tropicus, L. vulvastriatus, L. cardiacus)* to 25-30 (*L baldus, L siddiqii, L parapapillatus, L. coroniceps*). In the former case, the supplements are very well developed, distinct and prerectum terminate within the range of supplements while in the latter group the supplements are in a contiguous series and prerectum extends much beyond the range of supplements. The supplements are comparatively weak, appear as in two groups with few supplements in between them (*L andrassyi, L indicus, L. mangalorensis, L. octo, L. macrostylus*), and in these species prerectum also extends much beyond the range of supplements. The copulatory muscles are very prominent occupying the area upto the last supplement.

The shape and size of spicules, the shape and size of lateral guiding piece, the number and arrangements of ventromedian supplement, the number and area occupied by the copulatory muscles are fairly useful characteristic in the taxonomy of the genus *Laimydorus*.

Tail: Tail exhibit sexual dimorphism in two sexes and the length and shapes of the tail are most variable in the species of this genus *Laimydorus*. It varies from 3-5 anal body diameters (*L. bongersi*) to 14-20 anal body diameters (*L. indicus*). Tail is long filiform whip-like (*L. siddiqii, L. simplex, L. andrassyi, L. indicus*), tapering first, attenuated, distal part filiform, terminus finely rounded (*L. coroniceps*), convex conoid then tapering (*L. uterinus*), constricted dorsally and ventrally, then attenuated to finely rounded tip (*L. constrictus*). Tail also shows a wide variation in shape in males. It is bluntly rounded (*L. baldus, L. simplex, L. mangalorensis*), short convex-conoid (*L. dhanachandi, L. andrassyi, L. indicus, L. coroniceps*), conical, bluntly rounded with swollen tip (*L. esquiveli*) and hemispheroid, irregularly conical, conoid with long cuticular extension (*L. vacillans*). Usually the tail is provided with a pair of caudal pores on each side. Caudal pores varies from two (*L. tropicus, L. minimus, L multialeus*) to five pairs (*L. coroniceps, L. vacillans*). Caudal pores are indistinct (*L distinctus, L. simplex*). The length and shape of tail is one of the most important taxonomic characteristic in this genus at species level.

DESCRIPTION
OF
INDIAN SPECIES

Laimydorus conurus (Thorne, 1939) Siddiqi, 1969

(Fig. 1)

Measurements: See table 1

Female: Body ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards posteriorly. Cuticle with fine transverse striations, 1-2 µm thick at midbody and 2.0-2.5 µm on tail. Lateral chords about one-fourth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncate, offset by a slight depression, slightly wider than the adjoining body, about two times as wide as high or about one-fourth as wide as body width at neck base. Lips rounded, amalgamated. Amphids stirrup-shaped, their apertures about half of the lip region width wide. Odontostyle dorylaimoid, about 1.5-1.8 times lip region width long, its aperture about one-third of its length. Guiding ring "double", at 0.9-1.1 times the lip region width from anterior end. Odontophore simple, rod like, 1.2-1.4 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 31-32 % of neck length from anterior end. Pharyngeal expansion gradual; expanded portion occupying about 39-45% of the total neck length. Cardia elongate conoid, about one -third of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D = 57-59% AS1 = 40-42% AS2 = 48-51%

PS1 = 76-78% PS2 = 78-81%

Genital system didelphic amphidelphic; with both sexual branches almost equally well developed. Ovaries relatively small, reflexed, measuring 56-81 µm

(anterior) and 60-78 µm (posterior), reaching almost upto the oviduct-uterus junction; oocytes arranged in single rows except near tip. Oviduct a simple tube, with no clear demarcation of proximal part and *pars dilatata distalis*, joining ovary subterminally, measuring 50-80 µm (anterior) and 58-80 µm (posterior). Sphincter distinct at oviduct-uterus junction. Uterus a long, wide tube, its proximal portion with distinct lumen, narrowing gradually and joining distal portion, filled with well developed cuboidal cells, measuring 100-112 µm (anterior) and 95-116 µm (posterior). Vulva a longitudinal slit. Vagina extending inwards about one half or slightly less than half of corresponding body width; *pars proximalis vaginae* with straight walls encircled by circular musculature, measuring 10-11 µm; *pars refrengens vaginae* with two pear-shaped sclerotised pieces in lateral view, each measuring 3-4 × 3-3.5 µm, a well developed intermediate area visible between the sclerotised pieces, each measuring 3-4×2.5-3.5 µm with a combined width (*cw*) = 7-8 µm. *Pars distalis vaginae* 1.5-2 µm with curved walls. Prerectum 2.9-5.5 anal body widths long. Rectum 1.3-1.7 times anal body width long. Tail long, filiform, 7-9 times anal body width long. Caudal pores three on each side.

***Male*:** Supplements, an adanal pair and 18-21 contiguous ventromedians. Spicules dorylaimoid, slightly ventrally curved, 1.2-1.6 times anal body width long. Lateral guiding pieces about one-fourth of spicules length. Prerectum about 4.3-6.5 anal body widths long, extending 1-2 anal body widths beyond the range of supplements. Tail varies from bluntly rounded to slightly bluntly conoid, about 0.6-0.8 times anal body widths long, with three caudal pores on each side.

Habitat and locality: Soil around roots of black gram (*Vigna mungo* L.) from Alwanys, Margoa district, Goa, India.

***Remarks*:** Thorne (1939) described this species as *Dorylaimus conurus* which was later transferred to *Mesodorylaimus* by Goodey (1963). Siddiqi (1969) while proposing the genus *Laimydorus* transferred it to this genus because of the presence of a 'double' guiding ring, longitudinal vulva, males with a contiguous series of ventromedian supplements and prerectum in males extending much beyond the range of supplements. Andrássy (1988) again transferred it back to *Mesodorylaimus* without giving any reason, whereas, Loof (1996) accepted this species under *Laimydorus*. The presence of a 'double' guiding ring, longitudinal vulva and especially the character of male prerectum and supplements put this species more suitably under *Laimydorus* rather than in *Mesodorylaimus* and hence Ahmad and Ahmad (2002) accepted it as a species of *Laimydorus*. Ahmad and Ahmad (2002) redescription of this species was only the second report from the world after its original description by Thorne (1939). Although, Meyl (1957) reported a specimen of *Dorylaimus conurus* with an odontostyle length of 26 μm. Ahmad and Ahmad (2002) rightly pointed out that this population in all probability was not *D. conurus*. The present description agrees fairly well with the one provided by Ahmad and Ahmad (2002).

Table 1. Measurements of *Laimydorus conurus* (Thorne, 1939) Siddiqi, 1969
(All measurements in µm except body length)

Characters	Females	Males
n	**8**	**8**
L (mm)	1.37±0.05 (1.29-1.43)	1.23 ± 0.02 (1.19-1.28)
Body width at neck base	39.87±5.34 (34-47)	41.75±3.92 (36-48)
Body width at mid body	40.75±4.46 (34-47)	43.37±4.27 (38-50)
Body width at anus/cloaca	22.25±1.63 (20-26)	26.5±2.17 (25-32)
a	33.65±3.36 (28.6 -38.7)	28.56±2.62 (25.5-32.7)
b	4.84±0.14 (4.5-5.1)	4.49±0.09 (4.36-4.67)
c	6.72±0.17 (6.5-7)	61.33±3.77 (57.7-68.8)
c'	8.98±0.69 (7.8-9.7)	0.75±0.05 (0.68-0.84)
V	45.71±1.47 (44.18-48.06)	-
G_1	13.74±0.72 (12.83-14.61)	-
G_2	12.22±0.78 (11.24-13.17)	-
Lip region width	10.62±0.48 (10-11)	10.5±0.5 (10-11)
Lip region height	4.81±0.24 (4.5-5)	4.75±0.43 (4-5)
Amphid aperture	5.25±0.43 (5-6)	6±0.43 (5.5-6.5)
Odontostyle length	18.25±0.43 (18-19)	18.37±0.48 (18-19)
Odontophore length	23.62±0.48 (23-24)	23.5±0.5 (23-24)
Guiding ring from ant. end	10.5±0.5 (10-11)	11.12±0.59 (10-12)
Nerve ring from ant. end	95.5±2.29 (92-99)	91.12±1.05 (90-93)
Neck length	283.87±11.30 (265-304)	273.12±3.91 (265-278)
Expanded part of Pharynx	119.37±4.44 (112-128)	116.37±3.87 (112-125)
Cardia length	13.57±1.39 (12-16)	18±1.65 (16-21)
Anterior genital branch	186.25±6.17 (178-195)	-
Posterior genital branch	172±15.03 (150-192)	-
Vaginal depth	15.75±0.82 (15-17)	-
Vulva from anterior end	627.4±25.3 (599-670)	-
Prerectum length	80.87±9.54 (65-95)	141.25±11.40 (125-164)
Rectum length	34.25±1.29 (31-35)	-
Tail length	202.8±9.53 (180-217)	20.12±1.36 (18-22)
Spicules	-	33.87±0.78 (33-35)
Lateral guiding pieces	-	8.87±0.78(8-10)
Ventromedian supplements	-	18-21

Laimydorus andrassyi (Baqri and Jana, 1982) Loof, 1996
(Fig. 2)

Measurements: See table 2

***Female*:** Body almost straight to slightly ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards posteriorly, terminating in a long filiform tail. Cuticle with fine transverse striations, 2.5-3.5 µm thick at midbody and 4-5 µm on tail. Lateral chords about one-fourth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region markedly offset by a constriction, slightly wider than the adjoining body, about three times as wide as high or about one-fourth as wide as body width at neck base. Lips angular, amalgamated. Labial papillae slightly raised. Amphids stirrup-shaped, their aperture slightly less than half of the lip region width wide. Odontostyle dorylaimoid, about 1.6-2.0 times lip region width long, its aperture about one-third of its length. Guiding ring "double", at 1.0-1.3 times the lip region width from anterior end. Odontophore simple, rod-like, 1.0-1.3 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 25-28% of neck length from anterior end. Pharyngeal expansion very gradual; expanded portion occupying about 52-57% of the total neck length. Cardia elongate conoid, enveloped by intestinal tissue, about one-half of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D =49-51% AS1 = 35- 37% AS2 = 50-52%

PS1 =68-70% PS2 =72-73%.

Genital system didelphic amphidelphic with both sexual branches equally well developed. Ovaries relatively long, reflexed, measuring 162-277 µm (anterior) and 160-318 µm (posterior), reaching beyond the oviduct-uterus junction; oocytes arranged in single rows except near tip. Oviduct with a clear demarcation of proximal part with prismatic cells and *pars dilatata distalis* filled with sperms, joining ovary subterminally, measuring 107-218 µm (anterior) and 145-225 µm (posterior). Sphincter distinct at oviduct-uterus junction. Uterus a long, wide tube, its proximal portion with distinct lumen and cuboidal cells, swollen middle portion filled with well developed sperms, and slightly narrower distal portion, measuring 300-335 µm (anterior) and 260-340 µm (posterior). Vulva a longitudinal slit. Vagina extending inwards about one third of corresponding body width; *pars proximalis vaginae* with strong circular muscles, measuring 15-17 µm; *pars refrengens vaginae* with two triangular sclerotised pieces in lateral view, each measuring 4-5 × 2.5-3 µm, with a combined width (*cw*) = 10-11 µm. *Pars distalis vaginae* about 2-3 µm with curved walls. Prerectum 6-11 times anal body widths long. Rectum 1.3-1.6 times anal body widths long. Tail long, filiform, about 17-20 times anal body widths long. Caudal pores three on each side.

***Male*:** Supplements, an adanal pair and 17-20 contiguous ventromedians, the middle three or four of them are widely spaced. Copulatory muscles well developed.

Spicules dorylaimoid, slightly ventrally curved, 1.2-1.8 times anal body width long. Lateral guiding pieces rod-like, about one-fourth of spicules length. Prerectum about 6-10 anal body widths long, extending much beyond the range of supplements. Tail short conoid to bluntly rounded, about 0.6-0.8 times anal body width long, with three caudal pores on each side.

Habitat and locality: Soil around roots of paddy (*Oryza sativa* L.) from Yammajor, district Mangalore, Karnataka State and from Rajendra Nagar Agriculture farm, Hyderabad, Andhra Pradesh, India.

Remarks: Baqri and Jana (1983) described *Calodorylaimus andrassyi* from West Bengal, India. Loof (1996) synonymized *Calodorylaimus* Andrássy, 1969 with *Laimydorus* and transferred *C. andrassyi* to *Laimydorus. L. andrassyi* (Baqri and Jana, 1983) Loof, 1996 is characterized by having a long slender body (a=60-65), set off lip region, fairly long odontostyle, longitudinal vulva in females and males with prerectum extending far beyond the range of supplements. Ahmad and Ahmad (2002) described this species from Hyderabad and Mangalore. Baqri and Jana (1982) in their original description mentioned vulva as transverse slit while Ahmad and Ahmad (2002) in their redescription showed the presence of a longitudinal vulva. My present observation also support their view that vulva is longitudinal in this species.

Table 2. Measurements of *Laimydorus andrassyi* (Baqri and Jana, 1982) Loof, 1996

(All measurements in μm except body length)

Characters	Females	Males
n	5	5
L (mm)	3.82±0.02 (3.80-3.84)	3.17±0.02 (2.91-3.53)
Body width at neck base	62±9.52 (47-72)	54.8±8.35 (45-65)
Body width at mid body	65.8±8.97 (55-75)	58 ±6.0 (50-66)
Body width at anus/cloaca	28±1.89 (25-30)	35.6±5.53 (30-46)
a	63.32±8.67 (51.06 -69.9)	55.99±9.34 (45.1-67.8)
b	6.03±0.16 (5.8-6.2)	5.37±0.47 (4.76-6.02)
c	7.54±0.76 (6.9-8.6)	139.6±14.5 (116.4-153.4)
c`	18.7±1.28 (17.6-20.5)	0.64±0.08 (0.5-0.7)
V	45.5±2.14 (40.0-44.5)	-
G_1	12.67±0.53 (12.1-13.3)	-
G_2	13.07±0.84 (12.0-14.0)	-
Lip region width	15±0.89 (14-16)	14.4±0.48 (14-15)
Lip region height	4.5±0.44 (4 -5)	4.68±0.41 (4-5)
Amphid aperture	9.6±0.48 (9-10)	8.6±0.48 (8-9)
Odontostyle length	27.2±1.6 (25-29)	27±0.74 (25-27)
Odontophore length	30±1.41 (28-32)	27±2.09 (29-35)
Guiding ring from ant. end	16.6±0.40 (16-17)	16.4±0.48 (16-17)
Nerve ring from ant. end	161±5.71 (155-170)	145.6±9.0 (130-155)
Neck length	629±16.85 (610-660)	302.6±20.51 (275-328)
Expanded part of Pharynx	342.6±16.94 (328-370)	590.2±22.7 (555-625)
Cardia length	41.6±2.87 (38-45)	31.2±2.31 (28-35)
Anterior genital branch	498±25.01 (460-530)	-
Posterior genital branch	504±27.45 (460-535)	-
Vaginal depth	23.6±0.8 (23-25)	-
Vulva from anterior end	1691±98.05 (1530-1835)	-
Prerectum length	210±17.48 (180-230)	310±39.37 (270-370)
Rectum length	41±3.79 (38-48)	-
Tail length	511.7±51.04 (440-555)	22.28±1.32 (21-25)
Spicules	-	48.8±0.74 (48-50)
Lateral guiding pieces	-	12±0.89 (11-13)
Ventromedian supplements	-	17-20

Laimydorus siddiqii Baqri and Jana, 1982
(Fig. 3)

Measurements: See table 3

Female: Body ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards posteriorly, ending in a long filiform tail. Cuticle with fine transverse striations, 2-3 μm thick at midbody and 4-5 μm on tail. Lateral chords about one-fifth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by a slight depression, about three times as wide as high or slightly less than one-fourth as wide as body width at neck base. Lips rounded, amalgamated. Labial papillae indistinct. Amphid stirrup-shaped, their apertures about half the lip region width wide. Odontostyle dorylaimoid, about 1.6-1.8 times the lip region width long, its aperture about one-third of its length. Guiding ring "double", at about 1.1-1.3 times the lip region width from anterior end. Odontophore simple, rod-like, 1.1-1.2 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 26-31% of neck length from anterior end. Pharyngeal expansion very gradual; expanded portion occupying about 50-55% of the total neck length. Cardia elongate-conoid, about one-half of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D = 51-54%	AS1 = 31-34%	AS2 = 51-54%
	PS1 = 74-76%	PS2 =76-79%

Genital system didelphic amphidelphic with both sexual branches almost equally well developed. Ovaries relatively small, reflexed, measuring 95-155 μm

(anterior) and 105-154 μm (posterior), sometimes reaching or beyond the oviduct-uterus junction; oocytes arranged in single rows except near tip. Oviduct with a clear demarcation of proximal part with prismatic cells and *pars dilatata distalis* filled with sperms, measuring 90-130 μm (anterior) and 93-140 μm (posterior), joining ovary subterminally. Sphincter distinct at oviduct-uterus junction. Uterus a long, wide tube, measuring 218-265 μm (anterior) and 220-270 μm (posterior), its proximal portion with distinct lumen, middle part with well developed Z-differentiation, slightly narrower at distal portion. Vulva a longitudinal slit. Vagina extending inwards about one half or slightly less than half of corresponding body width; *pars proximalis vaginae* with strong muscles, measuring 15-18 μm; *pars refrengens vaginae* with three sclerotised pieces in lateral view; the outer two triangular and strongly sclerotised, each measuring 5-6 × 3-4 μm, middle piece 4-5×3-3.5 μm, with a combined width (*cw*) = 10-11 μm. *Pars distalis vaginae* about 3-4 μm with curved walls. Prerectum 5.0-7.6 anal body widths long. Rectum 1.3-1.5 times anal body widths long. Tail long, filiform, whip-like, 14-18 times anal body width long. Caudal pores three on each side.

***Male*:** Similar to female in general morphology except for the posterior region being more curved ventrally because of the presence of the copulatory muscles. Supplements, an adanal pair and 14-18 contiguous ventromedians. Copulatory muscles well developed. Spicules dorylaimoid, slightly ventrally curved, 1.4-1.8 times anal body widths long. Lateral guiding pieces about one-fourth of spicules length. Prerectum about 6.5-7.8 anal body widths long, terminating far beyond the

range of supplements. Tail short, conoid, about 0.6-0.7 times anal body widths long, with three caudal pores on each side.

Habitat and locality: Soil from near the roots of straw of rice field from Chandragardev, district Tinsukia, Upper Assam, India.

Remarks: Baqri and Jana (1982) described *L. siddiqii* from West Bengal, India. Ahmad and Ahmad (2002) redescribed it based on material collected from Uttaranchal, Kerala, Goa and Andhra Pradesh. In all the cases this species was recorded from the paddy fields and hence, Ahmad and Ahmad (2002) pointed out that there seems to be some kind of habitat specificity in this species for the wet soil and paddy field. The present record of this species from paddy fields in Assam further strengthens this hypothesis. It seems this species has a cosmopolitan distribution in India.

Table 3. Measurements of *Laimydorus siddiqii* Baqri and Jana, 1982
(All measurements in µm except body length)

Characters	Females	Males
n	7	7
L (mm)	2.73±51.92 (2.5-2.9)	2.02±4.17 (1.9-2.0)
Body width at neck base	52±3.20 (47-56)	49.42±12.93 (47-51)
Body width at mid body	51.85±2.53 (48-55)	51±1.06 (50-53)
Body width at anus/cloaca	24±9.21 (25-31)	31.85±1.12 (30-33)
a	54.55±0.89 (53.8 -56.0)	39.76±1.03 (38.4-41.2)
b	4.68±0.14 (4.5-4.9)	3.78±0.07 (3.66-3.89)
c	5.90±0.55 (5.4-6.8)	91.73±8.1 (79.38-101.8)
c`	17.36±1.66 (14.5-18.6)	0.69±0.5 (0.6-0.7)
V	46.36±1.30 (44.6-48.6)	-
G_1	12.72±0.26 (12.3-12.9)	-
G_2	13.46±0.24 (13.0-13.7)	-
Lip region width	15.28±0.45 (15-16)	15.57±0.62 (15-16.5)
Lip region height	5±0.53 (4-6)	5.35±0.44 (5-6)
Amphid aperture	8.57±0.49 (8-9)	8.78±0.45 (8-9.5)
Odontostyle length	28.75±0.34 (27-28)	27.35±0.58 (26.5-28)
Odontophore length	34.28±0.63 (33-35)	34.28±0.63 (33-35)
Guiding ring from ant. end	19.42±0.49 (19-20)	18.14±0.83 (17-19)
Nerve ring from ant. end	149.85±3. 64 (145-155)	141.28±2.24 (138-144)
Neck length	577.85±24.16 (540-612)	534.71±10.69 (518-552)
Expanded part of Pharynx	301.57±19.25 (280-338)	278.28±9.73 (258-290)
Cardia length	25.14±1.95 (22-28)	24.57±2.12 (22-28)
Anterior genital branch	350.28±17.70 (335-385)	-
Posterior genital branch	363±24.98 (333-340)	-
Vaginal depth	25.57±1.29 (23-27)	-
Vulva from anterior end	1210.71±54.5 (1154-1325)	-
Prerectum length	181.5±17.07 (162-215)	223.71±15.18 (205-250)
Rectum length	40.57±3.01 (45-55)	-
Tail length	466±18.72 (435-485)	22.28±2.18 (20-26)
Spicules	-	53.28±1.38 (51-55)
Lateral guiding pieces	-	15±0.75(14-16)
Ventromedian supplements	-	14-18

Laimydorus uterinus Loof, 1996
(Fig. 4)

Measurements: See table 4

***Female*:** Body almost straight upon fixation, tapering slightly towards the anterior end and more so towards the posterior, terminating in a long filiform tail. Cuticle with fine transverse striations, 2-3 µm thick at midbody and 3-5 µm on tail. Lateral chords about one-fourth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by constriction, about three times as wide as high or about one-fourth as wide as body width at neck base. Lips partly fused. Amphids stirrup-shaped, their aperture about half of the lip region width wide. Odontostyle dorylaimoid, about 1.9-2.2 times lip region width long, its aperture about one-third of its length. Guiding ring "double", at 1. 2-1.4 times the lip region width from anterior end. Odontophore simple, rod-like, 1.0-1.6 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 28-30% of neck length from anterior end. Pharyngeal expansion gradual; expanded portion occupying about 47-53% of the total neck length. Cardia elongate-conoid, about one-third to one-half of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D = 52-55%; AS1 = 34-36% AS2 = 53-55%;

PS1 = 73-76% PS2 = 74-77%

Genital system didelphic-amphidelphic with both sexual branches equally well developed. Ovaries relatively long, reflexed, measuring 122-195 µm (anterior) and 128-200 µm (posterior); oocytes arranged in single rows except near tip. Oviduct

very short, a simple tube, measuring 85-110 µm (anterior) and 95-120 µm (posterior), its junction with uterus, lying almost at level with the middle of the ovaries.Uterus a long, wide tube, measuring 280-315 µm (anterior) and 270-310 µm (posterior), its proximal portion with distinct lumen and distal portion with cuboidal cells narrowing gradually to a sphincter. Vulva a longitudinal slit. Vagina thick-walled, extending inwards about one-half of corresponding body width; *pars proximalis vaginae* with almost straight walls encircled by strong circular musculature, measuring 16-18 µm; *pars refrengens vaginae* with two drop-shaped sclerotised pieces in lateral view, each measuring 5-6 × 3-4 µm and a combined width (*cw*) = 10-11 µm. *Pars distalis vaginae* about 3-4 µm with curved walls. Prerectum 6.5-10 times anal body width long. Rectum 1.4-1.6 times anal body width long. Tail elongate-filiform, about 10-11 times anal body width long. Caudal pores three on each side.

Male: Supplements, an adanal pair and 24-25 contiguous ventromedians. Spicules dorylaimoid, slightly ventrally curved, about 1.6-1.7 times anal body width long. Lateral guiding pieces rod-like, about one-fourth of spicules length. Prerectum about 7.2-8.2 anal body widths long, extending much beyond the range of supplements. Tail bluntly rounded, about 0.7 times anal body width long, with three caudal pores on each side.

Habitat and locality: Soil around the roots of grass near railway station, Aligarh.

Remarks: Loof (1996) described *L. uterinus* from Ivory Coast. Present specimens from Aligarh conforms well with the type specimens except for having longer odontosyle (*vs* 25-30 µm), comparatively longer odontophore (*vs* 30-34 µm),

comparatively longer prerectum (*vs* 118-185 μm), elongate tapering filiform tail (*vs* dosal convex conoid tapering tail) and longer lateral guiding pieces (*vs* 8-10 μm) in males.

Table 4. Measurements of *Laimydorus uterinus* Loof, 1996

(All measurements in µm except body length)

Characters	Females	Males
n	7	2
L (mm)	2.28±0.05 (2.25-2.36)	2034, 2257
Body width at neck base	55.14±3.64 (51-60)	49, 53
Body width at mid body	57.42±3.92 (52-62)	50, 53
Body width at anus/cloaca	28.71±2.11 (26-32)	31, 35
a	42.80±0.83 (41.7 -43.7)	38.5, 46.1
b	4.28±0.05 (4.2-4.3)	3.9, 4.2
c	10.88±0.55 (10.1-11.4)	84.7, 90.3
c`	7.86±0.07 (7.7-7.9)	0.71, 0.77
V	46.54±1.42 (44.6-48.0)	-
G_1	13 - 14	-
G_2	13 - 14	-
Lip region width	15.35±0.44 (15-16)	15, 16
Lip region height	6±0.75 (5-7)	5, 6
Amphid aperture	9.71±0.45 (9-10)	8, 9
Odontostyle length	32.14±1.24 (31-35)	30, 31
Odontophore length	37.42±0.63 (35-40)	35, 36
Guiding ring from ant. end	20.14±0.63 (19-21)	19, 20
Nerve ring from ant. end	162.5±6.57 (155-173)	155, 160
Neck length	549.6±23.95 (525-600)	516, 535
Expanded part of Pharynx	273.3±10.77 (260-290)	250, 260
Cardia length	34.3±2.05 (32-38)	28, 30
Anterior genital branch	352.8±32.48 (310-385)	-
Posterior genital branch	344.8±34.08 (305-410)	-
Vaginal depth	26.4±1.01 (25-28)	-
Vulva from anterior end	1206.8±139.3 (1005-1380)	-
Prerectum length	210.5±12.16 (162-215)	225, 288
Rectum length	45.5±2.98 (41-50)	-
Tail length	210±8.64 (209-222)	19, 22
Spicules	-	55, 56
Lateral guiding pieces	-	14, 15
Ventromedian supplements	-	24, 25

Laimydorus macrostylus Ahmad and Ahmad, 2002
(Fig. 5)

Measurements: See table 5

***Female*:** Body slightly ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards the posterior end. Cuticle with fine transverse striations, 1.5-2.5 µm thick at midbody and 2.5-3.5 µm on tail. Lateral chords about one- third of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncate, almost continuous with the body contour, about twice as wide as high or about one-fifth as wide as body width at neck base. Lips angular, amalgamated; labial papillae slightly raised. Amphids stirrup-shaped, their aperture about half of the lip region width wide. Odontostyle dorylaimoid, about 2.9-3.0 times lip region width long, its aperture about one-third of its length. Guiding ring "double", at 1.6-2.0 times the lip region width from anterior end. Odontophore simple, rod-like, 1.02-1.05 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 32-35% of neck length from anterior end. Pharyngeal expansion very gradual, expanded portion occupying about 47-50% of the total neck length. Cardia elongate-conical, enveloped by intestinal tissue, about one-fourth to one-third of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D = 52-53%	AS1 = 33-35%	AS2 = 50-53%
	PS1 =74-75%	PS2 =79-80%

Genital system didelphic-amphidelphic with both sexual branches equally well developed. Ovaries relatively long, reflexed, measuring 120-155 µm (anterior) and 118-140 µm (posterior), reaching beyond the oviduct-uterus junction; oocytes arranged in single rows except near tip. Oviduct with a no clear demarcation of proximal part and *pars dilatata distalis*, joining ovary subterminally, measuring 90-105 µm (anterior) and 90-108 µm (posterior). Sphincter distinct at oviduct-uterus junction. Uterus a long, wide tube, its proximal portion with distinct lumen and cuboidal cells, swollen middle portion bibulbar and slightly narrower distal portion, measuring 245-275 µm (anterior) and 250-280 µm (posterior). Vulva a longitudinal slit. Vagina thick-walled, extending inwards about 42-46% of corresponding body width; *pars proximalis vaginae* with almost straight walls encircling by strong circular musculature, measuring 19-20 µm; *pars refrengens vaginae* with two triangular sclerotised pieces in lateral view, each measuring 4.5-5 × 3-3.5 µm and a combined width (*cw*) = 9-10 µm. *Pars distalis vaginae* 2-3 µm with curved walls. Prerectum 5-7 times anal body width long. Rectum 1.5-1.9 times anal body width long. Tail long, filiform, about 10-13 times anal body width long. Caudal pores three on each side.

Male: Supplements, an adanal pair and 18-19 ventromedians, appearing as in two groups of six to seven each with few supplements in between. Spicules dorylaimoid, slightly ventrally curved, about 1.9 times anal body width long. Lateral guiding pieces rod-like, about one-fifth of spicules length. Prerectum about 8.6-10 anal body widths long, slightly extending anterior to the range of supplements. Tail

short convex-conoid, about 0.8-0.9 times anal body width long, with three caudal pores on each side.

Habitat and locality: Soil around the roots of paddy (*Oryza sativa* L.) from Bellibett, Mangalore district, Karnataka, India.

Type material: Paratype two females and two males examined. Available with the nematode collection of Department of Zoology, Aligarh Muslim University.

Remarks: Morphological features and the measurement of the paratypes examined agree well with the original description provided by Ahmad and Ahmad (2002). However, some minor differences with original measurements in body size (*vs* L= 2.0-2.2 mm), slightly shorter odontostyle (*vs* 36-37 µm) and slightly longer rectum (*vs* 31-35 µm) were recorded.

Table 5. Measurements of *Laimydorus macrostylus* Ahmad and Ahmad, 2002

(All measurements in μm except body length)

Characters	Females	Males
n	2	2
L (mm)	2275, 2375	2071, 1969
Body width at neck base	65, 74	58, 65
Body width at mid body	64, 74	60, 68
Body width at anus/cloaca	21, 25	25, 26
a	32.1, 34.46	34.51, 28.95
b	4.55, 5.0	4.14, 4.31
c	7.45, 9.13	82.04, 98.61
c`	10.4, 13.86	0.8, 0.9
V	45.9, 48.2	-
G_1	15, 16	-
G_2	14, 16.5	-
Lip region width	11, 12	10, 11
Lip region height	4.5, 5.0	4.5, 5
Amphid aperture	6, 7	6, 7
Odontostyle length	34, 35	34, 35
Odontophore length	35, 37	32, 33
Guiding ring from ant. end	20, 22	20, 21
Nerve ring from ant. end	161, 165	155, 161
Neck length	475, 505	475, 481
Expanded part of Pharynx	238, 250	225, 235
Cardia length	16, 22	21, 23
Anterior genital branch	340, 370	-
Posterior genital branch	340, 380	-
Vaginal depth	28,30	-
Vulva from anterior end	1080, 1155	-
Prerectum length	138, 155	225,255
Rectum length	37, 40	-
Tail length	260, 305	21,23
Spicules	-	48,50
Lateral guiding pieces	-	10,11
Ventromedian supplements	-	18,19

Laimydorus mangalorensis Ahmad and Ahmad, 2002
(Fig. 6)

Measurements: See table 6

***Female*:** Body almost straight upon fixation, tapering slightly towards the anterior end and more so towards the posterior extremity, terminating in a long filiform tail. Cuticle with fine transverse striations, 3.5-4.5 µm thick at midbody and 4-4.5 µm on tail. Lateral chords about one-fourth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by a depression, slightly wider than the adjoining body, about three times as wide as high or about one-fourth of body width at neck base. Lips angular, amalgamated. Amphids stirrup-shaped, their aperture about half of the lip region width wide. Odontostyle dorylaimoid, about 1.5-1.6 times lip region width long, its aperture about one-third of its length. Guiding ring "double", at 1.12-1.18 times the lip region width from anterior end. Odontophore simple, rod-like, 1.1-1.2 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 27-30% of neck length from anterior end. Pharyngeal expansion very gradual; expanded portion occupying about 51-53% of total neck length. Cardia elongate-conoid, about one-third to one-half of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D = 50-51% AS1 = 36-39% AS2 = 47-50%

PS1 = 69-72% PS2 = 73-75%

Genital system didelphic-amphidelphic with both sexual branches equally well developed. Ovaries relatively long, reflexed, measuring 80-88 µm (anterior) and

75-95 µm (posterior); oocytes arranged in single rows except near tip. Oviduct a simple tube, joining ovary subterminally, measuring 85-110 µm (anterior) and 75-105 µm (posterior). Sphincter distinct at oviduct-uterus junction. Uterus a long, wide tube, its proximal portion with distinct lumen and swollen middle portion with cuboidal cells, and slightly narrower distal portion, measuring 215-225 µm (anterior) and 200-210 µm (posterior). Vulva a longitudinal slit. Vagina thick-walled, extending inwards about one-third of corresponding body width; *pars proximalis vaginae* with almost straight walls encircled by strong circular muscles, measuring 15-16 µm; *pars refrengens vaginae* with two drop-shaped sclerotised pieces in lateral view, each measuring 3-4× 2-2.5 µm and a combined width (*cw*) = 8-9 µm. *Pars distalis vaginae* 2-3 µm with curved walls. Prerectum 5-7 anal body widths long. Rectum 1.5-1.9 times anal body width long. Tail elongate-filiform, about 7-13 times anal body width long. Caudal pores three on each side.

Male: Supplements, an adanal pair and 18 contiguous ventromedians; the middle four or five of these are more widely spaced. Spicules dorylaimoid, slightly ventrally curved, about 1.3-1.4 times anal body width long. Lateral guiding pieces rod-like, about one-fourth of spicules length. Prerectum about 5.4-7.3 anal body widths long, extending much beyond the range of supplements. Tail bluntly rounded, about 0.7-0.8 times anal body width long, with three caudal pores on each side.

Habitat and locality: Soil around the roots of paddy (*Oryza sativa* L.) from Grupur, Mangalore district, Karnataka, India.

Type material: Paratype three females and three males examined. Available with the nematode collection of Department of Zoology, Aligarh Muslim University.

Table 6. Measurements of *Laimydorus mangalorensis* Ahmad and Ahmad, 2002

(All measurements in µm except body length)

Characters	Females	Males
n	3	3
L (mm)	2.51±0.15 (2.3-2.6)	2.45±0.03 (2.40-2.49)
Body width at neck base	63±2.94 (60 -67)	61±3.55 (56-64)
Body width at mid body	63.66±1.24 (62-65)	62.33±4.49 (56-66)
Body width at anus/cloaca	29.33±1.24 (28-31)	32±1.63 (30-34)
a	39.49±1.88 (37.3-42.9)	39.86±2.71 (37.8-43.7)
b	5.29±0.29 (4.9-5.6)	4.59±0.17 (4.46-4.84)
c	8.35±1.63 (6.8-10.6)	99.41±10.9 (85.8-112.5)
c`	10.74±2.61 (7.5-13.9)	0.77±0.06 (0.7-0 8)
V	44.14±1.73 (42.8-46.5)	-
G_1	12.09±0.65 (11.27-12.77)	-
G_2	11.45±0.32 (11.1-11.73)	-
Lip region width	15.5±0.5 (15-16)	15.5±0.5 (15-16)
Lip region height	4.25±0.25 (4-4.5)	5±0 (5)
Amphid aperture	7.5±0.5 (7-8)	7.5±0.5 (7-8)
Odontostyle length	25.33±0. 47 (25-26)	27.33±0. 47 (27-28)
Odontophore length	29.66±0.47 (29-30)	29±0.81 (28-30)
Guiding ring from ant. end	17.33±1.24 (16-19)	18.33±0.47 (18-19)
Nerve ring from ant. end	135.66±58.9 (128-140)	148.66±7.36 (140-158)
Neck length	475±4.08 (470-480)	535±16.3 (515-535)
Expanded part of Pharynx	248±1.63 (246-250)	280±10.80 (265-290)
Cardia length	25.33±2.05 (23-25)	30.33±2.05 (28-33)
Anterior genital branch	356.66±157.69 (310-400)	-
Posterior genital branch	358.33±158.04 (310-390)	-
Vaginal depth	26.5±0.5 (26-27)	-
Vulva from anterior end	1108.33±33.2 (1080-1155)	-
Prerectum length	142.66±5.55 (135-148)	205.33±14.71 (185-220)
Rectum length	37.5±0.5 (37-38)	-
Tail length	314.33±71.72 (218-390)	23±0.81 (22-24)
Spicules	-	45±0.81 (44-46)
Lateral guiding pieces	-	11.33±0.94 (10-12)
Ventromedian supplements	-	18

Remarks: Morphological features and the measurement of the paratypes examined agree well with the original description provided by Ahmad and Ahmad (2002). However some minor differences with original measurements in body size (*vs* L= 2.0-2.4 mm), cardia (*vs* 23-30 μm) and tail length (*vs* 218-390 μm) were recorded.

Laimydorus cardiacus Baniyamuddin and Ahmad, 2006
(Fig. 7)

Measurements: See table 7

Female: Body ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards posteriorly, terminating in a long filiform tail. Cuticle with fine transverse striations, 4-5 µm thick at midbody and 5-6 µm on tail. Lateral chords about one-fifth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncate, offset by slight depression, slightly wider than adjoining body, about three times as wide as high or about one-third as wide as body width at neck base. Labial papillae with visible innervation, distinctly projecting above the labial contour. Amphids stirrup-shaped, their apertures about two-thirds of the lip region width. Odontostyle sinuate, about 2.1-2.3 times lip region width long, its aperture about one-fourth of its length. Guiding ring "double," at 1.1-1.3 times the lip region width from anterior end. Odontophore simple, rod-like, 1.1-1.2 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 31-35% of neck length from anterior end. Pharyngeal expansion very gradual; expanded portion occupying about 42-48% of the total neck length. Cardia in two parts; anterior part hemispherical, measuring 17-22 µm and posterior part elongate-conical 20-26 µm, the two parts joined by an isthmus-like structure projecting into the intestinal lumen. Pharyngeal gland nuclei located as follows:

D =51-54%	AS1 = 33-35%	AS2 = 50-53%
	PS1 = 72-75%	PS2 = 73-76%

Genital system didelphic amphidelphic, with both sexual branches almost equally well developed. Ovaries relatively small, reflexed, measuring 62-104 µm (anterior) and 64-140 µm (posterior) not reaching upto the oviduct-uterus junction; oocytes arranged in single rows except near tip. Oviduct with clear demarcation of proximal part and wide *pars dilatata distalis*, joining ovary subterminally, measuring 100-125 µm (anterior) and 100-140 µm (posterior). Sphincter distinct at oviduct-uterus junction. Uterus a long, wide tube, proximal portion with distinct lumen and distal portion filled with sperms, measuring 120-155 µm (anterior) and 100-140 µm (posterior). Vulva a longitudinal slit. Vagina thick-walled, about half of corresponding body width deep; *pars proximalis vaginae* 13-15 µm long with straight walls encircled by circular musculature; *pars refrengens vaginae* with two trapezoid sclerotized pieces, each measuring 6-7 × 5-6 µm, a well developed intermediate area between two sclerotized pieces, measuring 4-5 µm and combined width (*cw*) = 13-14 µm. *Pars distalis vaginae* 4-5 µm with curved walls. Prerectum 3.8-4.7 times anal body widths long. Rectum 1.6-2.0 times anal body width long. Tail long, filiform, 7.3-8.6 times anal body width long, terminus ventrally or dorsally curved. Caudal pores three on each side.

***Male*:** Not known

***Habitat and locality*:** Soil from the roots grasses from Basu ground, district Thoubal, Manipur.

***Remarks*:** Baniyamuddin and Ahmad (2006) described *L. cardiacus* from Arunachal Pradesh, India. Present specimens from Manipur conforms well with the type specimens except for having greater c value (*vs* c = 6.2-7.7), shorter tail (*vs* 249-

302 μm, c'= 9-11), ventrally as well as dorsally curved tail at tip (*vs.* dorsally curved tail at tip). This is the second report of this species from North Eastern States.

Table 7. Measurements of *Laimydorus cardiacus* Baniyamuddin and Ahmad, 2006

(All measurements in µm except body length)

Characters	Females
n	8
L (mm)	2.2±0.09 (2.1-2.3)
Body width at neck base	47.85±2.41 (46-53)
Body width at mid body	50.71±1.74 (48-54)
Body width at anus	30.5±1.11 (29-33)
a	43.16±1.98 (40.03-46.04)
b	4.26 ± 0.30 (4.02-5.03)
c	8.94±0.31(8.41-9.31)
c`	8.08±0.38 (7.57-8.66)
V	51.65±1.34 (49.47-54.34)
G_1	12.11±0.49 (11.16-12.62)
G_2	12.38±0.89 (11.28-14.13)
Lip region width	15.37±0.48 (15-16)
Lip region height	5.14±0.34 (5-6)
Amphid aperture	10.37±0.48 (10-11)
Odontostyle length	34.37±0.48 (34-35)
Odontophore length	28.5±0.5 (28-29)
Guiding ring from ant. end	19.28±0.69 (19-20)
Nerve ring form ant. end	168.33±2.62 (165-172)
Neck length	514.57±21.10 (470-540)
Expanded part of Pharynx	240±18.92 (200-270)
Cardia length	43.5±6.4 (30-54)
Anterior genital branch	268.2±12.4 (257-290)
Posterior genital branch	273.5±28.92 (242-335)
Vaginal depth	24.5±2.12 (21-27)
Vulva from anterior end	1133.62±35.86 (1090 -1175)
Prerectum length	134.62±8.91 (120-145)
Rectum length	55.6 ±3.49 (50-60)
Tail length	247.62±11.08 (230-260)

Laimydorus parapapillatus Mushtaq and Ahmad, 2006
(Fig. 8)

Measurements: See table 8

***Female*:** Body ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards posterior extremity. Cuticle with fine transverse striations, 3-4 µm thick at midbody and 4-5 µm on tail. Lateral chords about one-fourth of the corresponding body width at midbody. Body pores distinct; ventral pores 16-19 in the pharyngeal region, 14-17 between cardia and vulva, 15-20 between vulva to anus and 2-3 on tail; dorsal pores 20-22 in the pharyngeal region, 14-18 between cardia to anus and 1-2 on tail.

Lip region offset by a slight depression, about three times as wide as high or about one-fourth as wide as body width at neck base. Lips rounded, amalgamated. Labial papillae indistinct. Amphids cup-shaped, their aperture about half of the lip region width wide. Odontostyle dorylaimoid, about 1.4-1.8 times lip region width long, its aperture about one-third of its length. Guiding ring "double", at 1.0-1.3 times the lip region width from anterior end. Odontophore simple, rod-like, 1.2-1.9 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 31-35% of neck length from anterior end. Pharyngeal expansion very gradual; expanded portion occupying about 48-51% of the total neck length. Cardia elongate conoid, about one-third of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D = 48-51%	AS1 = 42-44%	AS2 = 49-52%
	PS1 = 72-75%	PS2 =73-76%

Genital system didelphic amphidelphic with both branches almost equally well developed. Ovaries relatively large, reflexed, measuring 180-285 µm (anterior) and 190-290 µm (posterior), surpassing the demarcation at oviduct-uterus junction; oocytes arranged in single rows except near tip. Oviduct with a clear demarcation of proximal part with prismatic cells and *pars dilatata distalis* filled with sperms, joining ovary subterminally, measuring 155-190 µm (anterior) and 150-225 µm (posterior). Sphincter indistinct. Uterus a very long, wide tube, measuring 250-325 µm (anterior) and 265-325 µm (posterior); proximal portion with distinct lumen, a narrower distal portion, the middle portion with well developed Z-differentiation,. Vulva a longitudinal slit. Vagina extending inwards about one half or slightly less than one half of corresponding body width; *pars proximalis vaginae* measuring 20-23 µm with almost straight walls, encircled by circular musculature; *pars refrengens vaginae* with four sclerotised pieces in lateral view; the outer two triangular and strongly sclerotised, each measuring 5-6 x 3-4 µm, the middle two almost rectangular, weakly sclerotised, each measuring 4-5 x 3 µm and with a combined width (*cw*) = 12-13 µm. *Pars distalis vaginae* short, about 3.0-3.5 µm long with slightly curved walls. Prerectum 6-10 anal body widths long. Rectum 1.4-1.7 times anal body width long. Tail elongate filiform, 4.6-5.5 times anal body widths long, tapering on both sides; terminus finely rounded; hyaline part 8-18% of total tail length. Caudal pores three on each side

***Male*:** Similar to female in general morphology except for the posterior region being more curved ventrally because of the presence of the copulatory muscles. Supplements, an adanal pair and 26-31 contiguous ventromedian. Copulatory muscles

well developed. Spicules dorylaimoid, slightly ventrally curved, 1.2-1.5 times anal body widths long. Lateral guiding pieces about one-fourth of spicule length. Prerectum about 9-11 anal body widths long, terminating far beyond the range of supplements. Tail short, conoid about 0.61-0.76 times anal body width long, with two caudal pores on each side.

Habitat and locality: Soil around the rhizosphere of plants from the periphery of Nalla, outer Ring Road, Aligarh. India.

Remarks: Mushtaq and Ahmad (2006) described *L. parapapillatus* from Kashmir, India. Present specimens from Aligarh conforms well with the type specimens except for having slightly longer body (*vs* L = 2.3-2.8 mm), comparatively longer cardia (*vs* 20-28 µm), comparatively longer prerectum (*vs* 160-178 µm).

Table 8. Measurements of *Laimydorus parapapillatus* Mushtaq and Ahmad, 2006

(All measurements in µm except body length)

Characters	Females	Males
n	8	8
L (mm)	3.04±0.16 (2.7 -3.2)	2.9±0.09 (2.7 -3.0)
Body width at neck base	78±10.11 (64 -95)	73.5±7.64 (56-80)
Body width at mid body	80.75±10.79 (64-95)	78.25±9.71 (56-88)
Body width at anus/cloaca	29.75±1.56 (27-32)	36.12±1.83 (33-39)
a	37.01±2.69 (34.1-42.9)	38.06±5.09 (33.3-50.8)
b	5.44±0.23 (5.0-5.7)	5.17±0.23 (4.76-5.47)
c	19.19±1.48 (17.9-22.4)	115.2±6.4 (101.3-123.6)
c'	5.11±0.30 (4.6-5.5)	0.70±0.4 (0.6-0.7)
V	46.36±1.30 (44.6-48.6)	-
G_1	14.82±1.02 (14.0-17.1)	-
G_2	15.70±1.28 (14.2-18.2)	-
Lip region width	17.25±0.82 (16-18)	17.37±0.48 (17-18)
Lip region height	6.12±0.59 (5-7)	5.5±0.5 (5-6)
Amphid aperture	9.5±0.5 (9-10)	9.5±0.5 (9-10)
Odontostyle length	28.75±1.19 (26-30)	30.75±0.96 (29-32)
Odontophore length	38.37±1.49 (35-40)	38.37±1.49 (35-40)
Guiding ring from anterior end	19±1.11 (18-21)	19.37±0.69 (18-20)
Nerve ring from anterior end	158.88±7.43 (150-171)	161.62±5.45 (152-170)
Neck length	556.12±17.96 (530-590)	566.87±29.87 (240-325)
Expanded part of Pharynx	275.62±1.04 (265-290)	285.75±2.54 (240-325)
Cardia length	32.37±3.15 (28-38)	29.75±2.27 (28-35)
Anterior genital branch	445.37±45.76 (400-530)	-
Posterior genital branch	473.75±50.23 (430-565)	-
Vaginal depth	35±2.87 (32-42)	-
Vulva from anterior end	1396.25±88.3 (1290-1568)	-
Prerectum length	211.5±22.4 (184-253)	346±36.78 (275-408))
Rectum length	47.5±3.23 (45-55)	-
Tail length	153.28±8.72 (140-165)	29.5±1.65 (24-29)
Spicules	-	52±1.5 (50-54)
Lateral guiding pieces	-	14.12±0.78 (13-15)
Ventromedian supplements	-	26-31

Laimydorus bomdillaensis sp.n.
(Fig.9)

Measurements: See table 9

Female- Body ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards posteriorly, ending in a long filiform tail. Cuticle with fine transverse striations, 2-3 µm thick at midbody and 3-4 µm on tail. Lateral chords about one-fifth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region truncate, offset by slight depression, about twice as wide as high or slightly more than one-third as wide as body width at neck base. Labial papillae with visible innervation, distinctly projecting above the labial contour. Amphids stirrup-shaped, their apertures about half of the lip region width. Odontostyle sinuate, about 1.9-2.2 times lip region width long, its aperture about one-fourth of its length. Guiding ring "double", at 1.0-1.3 times the lip region width from anterior end. Odontophore simple, rod-like, 0.8-0.9 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 33-37% of neck length from anterior end. Pharyngeal expansion very gradual; expanded portion occupying about 40-44% of the total neck length. Cardia in two parts; anterior part hemispherical measuring 8-12 µm and posterior part elongate-conical, 11-25 µm, the two parts joined by an isthmus-like structure projecting into the intestinal lumen. Pharyngeal gland nuclei located as follows:

D = 50-53% AS1 = 31-34% AS2 = 49-51%

PS1 = 72-75% PS2 = 74-76%.

Genital system didelphic amphidelphic with both sexual branches almost equally well developed. Ovaries relatively small, reflexed, measuring 55-75 µm (anterior) and 55-80 µm (posterior), reaching upto the or beyond the oviduct-uterus junction; oocytes arranged in single rows except near tip. Oviduct with no clear demarcation of proximal part and *pars dilatata distalis*, measuring 50-77 µm (anterior) and 50-76 µm (posterior); oviduct-uterus junction slightly demarcated. Uterus a wide tube, proximal portion with distinct lumen and distal portion with prominent zig zag folds, measuring 30-33 µm (anterior) and 28-35 µm (posterior). Vulva a longitudinal slit. Vagina thick walled, slightly more than half of corresponding body width deep; *pars proximalis vaginae* 8-9 µm long with straight walls encircled by circular musculature; *pars refringens vaginae* with two rectangular sclerotised pieces, each measuring 3-3.5 × 2-2.5 µm, *cw* = 8-8.5 µm. *Pars distalis vaginae* 2-2.5 µm with curved walls. Prerectum about 1.5-2.3 times anal body width long. Rectum 1.4-1.9 times anal body width long. Tail long, filiform 11-13 times anal body width long and dorsally hooked at tip with three caudal pores on each side.

***Male*:** Not found

***Type habitat and locality*:** Soil around the roots of shrubs near Dzong Bazar Bomdilla, West Kameng district, Arunachal Pradesh.

***Type specimens*:** Holotype female on slide *Laimydorus bomdillaensis* sp.n./1.; paratypes females on slides *Laimydorus bomdillaensis* sp.n./2-4; deposited with nematode collection of Department of Zoology, Aligarh Muslim University, India.

***Diagnosis and relationship*:** *Laimydorus bomdillaensis* sp. n. is characterised by having 1.0-1.2 mm long body; truncate lip region; 21-22 µm long sinuate

odontostyle; "double"guiding ring; longitudinal vulva and long filiform dorsally hooked female tail.

In the presence of truncate lip region, sinuate odontostyle, "double" guiding ring and longitudinal vulva, the new species comes close to *L. flexus* (Thorne and Swanger, 1936) Andrássy, 1969; *L. renwicki* (Vander Linde, 1938) Andrássy, 1969; and *L. cardiacus* Baniyamuddin and Ahmad, 2006. However, it differs from the former in having shorter and robust body (*vs* L = 2.0-2.2 mm, a = 40-46); truncate lip region (*vs* continuous with low lips); labial papillae raised above contour (*vs* not raised), shorter odontostyle (*vs* 28-30 µm); shorter odontophore (*vs* 24-25 µm); shorter pharynx (*vs* b= 4.4-5.0, 448-485 µm); cardia in two parts (*vs* simple cardia); comparatively anterior vulva (*vs* 46-52); in nature of vaginal sclerotization (*vs* two triangular sclerotizes pieces in lateral view); shorter prerectum (*vs* 68-110 µm) and lesser c value (*vs* c = 6.8).

From *L. renwicki*, the new species differs in having shorter and robust body (*vs* L = 1.5-1.9 mm, a = 36-38); truncate lip region (*vs* continuous with low lips); labial papillae raised above contour (*vs* not raised), shorter odontostyle (*vs* 30-32 µm); shorter odontophore (*vs* 24-26 µm); shorter pharynx (*vs* 381-429 µm); cardia in two parts (*vs* simple cardia); comparatively anterior vulva (*vs* 48-50); in nature of vaginal sclerotization (*vs* two triangular sclerotizes pieces in lateral view); shorter prerectum (*vs* 54-69 µm) and longer and dorsally hooked female tail at tip (*vs* c = 7, c'= 9-10, straight tail).

From *L. cardiacus*, the new species differs in having shorter and robust body (*vs* L = 1.8-1.9 mm, a = 41.1-43.6); shorter odontostyle (*vs* 34-34.5 µm); shorter

odontophore (*vs* 28-30 µm); shorter pharynx (*vs* 467-505 µm); comparatively anterior vulva position (*vs* 46-49); in nature of vaginal sclerotization (*vs* three triangular sclerotised pieces in lateral view); shorter prerectum (*vs* 92-142 µm); lesser c value (*vs* c = 6.2-7.7) and more c' value (*vs* c'= 9-11).

In the shape of its lip region and nature of odontostyle and odontophore, the new species resembles some monosexual species *viz., P. maqsoodi* (Dhanachand and Jairajpuri, 1981) and *P. similis* (Dhanachand and Jairajpuri, 1981) Loof, 1985 tentatively placed under the genus *Prodorylaimus* Andrássy, 1959 (cf. Loof, 1985, 1996). From *P. maqsoodi* the new species differs in having shorter and robust body (*vs* L = 1.40-1.64 mm, a = 37-43); stirrup-shaped amphids (*vs* cup shaped); narrow lip region (*vs* wider lip region); greater b value (*vs* b = 3.3-3.6); lesser c value (*vs* c = 10-12); shorter odontostyle (*vs* 33-35 µm); shorter odontophore (*vs* 36-39 µm); cardia in two parts (*vs* elongated conoid cardia); longitudinal vulva (*vs* transverse); anterior position of vulva (*vs* 52-56); sphincter indistinct at oviduct at junction (*vs* distinct sphincter present at oviduct at junction); shorter prerectum (*vs* 75-90 µm); longer and dorsally curved tail (*vs.* c' =6-7, 142-150 µm, straight tail).

From *P. similes,* the new species differ in having shorter and robust body (*vs* L = 1.5-1.6 mm, a = 40-42); lesser c value (*vs* c = 8-9 µm); stirrup-shaped amphids (*vs* cup shaped); shorter odontostyle (*vs* 24-26 µm); shorter odontophore (*vs* 30-32 µm); cardia in two parts (*vs* elongated conoid cardia); longitudinal vulva (*vs* transverse), anterior position of vulva (*vs* 52-56); shorter prerectum (*vs* 56-60 µm); shorter rectum (*vs* 45-53 µm) and longer tail (*vs* c' = 8-9, 180-203µm).

Table 9. Measurements of *Laimydorus bomdillaensis* sp. n.
(All measurements in µm except body length)

Characters	Holotype female	Paratype females
n		**8**
L (mm)	1.22	1.21±0.012 (1.1-1.2)
Body width at neck base	35	35.33±1.24 (32-37)
Body width at mid body	37	37.33±0.49 (34-40)
Body width at anus	21	21±0.81 (20-22)
a	33.13	32.65±1.71 (29.7-34.8)
b	4.15	4.11±0.16 (3.7-4.2)
c	4.90	4.62±0.30 (4.20-5.05)
c`	11.90	12.53±1.02 (11.1-13.7)
V	46.41	44.64±1.53 (42.1-46.6)
G_1	8.89	8.30±0.85 (6.54-9.02)
G_2	8.56	7.97± 0.81(6.31-8.66)
Lip region width	11	10.37±0.48(10-11)
Lip region height	5	4.33± 0.47(4-5)
Amphid aperture	5.5	6.01±0.44 (5.5-6.5)
Odontostyle length	22	21.37±0.48 (21-22)
Odontophore length	19	19.12±0.78 (18-20)
Guiding ring from ant. end	12	10.66±0.94 (12-13)
Nerve ring from ant. end	115	115.66±0.94 (112-118)
Neck length	295	277.33±4.78 (292-303)
Expanded part of Pharynx	120	118.33±6.23 (110-125)
Cardia length	23	29±4.93 (23-38)
Anterior genital branch	109	100.83±9.97 (80-100)
Posterior genital branch	105	97±9.57 (78-106)
Vaginal depth	15	14.82±0.78 (14-16)
Vulva from anterior end	569	536.37±40.49 (458-580)
Prerectum length	45	44±8.28 (35-53)
Rectum length	34	33.33±2.49 (30-38)
Tail length	250	244.66±8.57 (200-280)

Laimydorus paraconurus sp. n.

(Fig.10)

Measurements: See table 10

Female: Body ventrally curved upon fixation, tapering slightly towards the anterior end and more so towards posterior extremity. Cuticle with fine transverse striations, 1.5-2.0 µm thick at midbody and 3-4 µm on tail. Lateral chords about one-fifth of the corresponding body width at midbody. Lateral, dorsal and ventral body pores indistinct.

Lip region offset by a deep depression, about twice as wide as high or about one-fourth as wide as body width at neck base. Labial papillae slightly raised. Amphids stirrup-shaped, their apertures about half of the lip region width wide. Odontostyle dorylaimoid, about 1.8-2.0 times lip region width long, its aperture about one-third of its length. Guiding ring "double", at 1.0-1.3 times the lip region width from anterior end. Odontophore simple, rod-like, 1.2-1.3 times the odontostyle length. Nerve ring encircling the anterior slender part of pharynx at 33-36% of neck length from anterior end. Pharyngeal expansion gradual; expanded portion occupying about 43-47% of the total neck length. Cardia short conoid, about one-third of the corresponding body width long. Pharyngeal gland nuclei located as follows:

D = 49-52% AS1 = 34-37% AS2 = 41-43%

PS1 =71-73% PS2 = 73-75%

Genital system didelphic-amphidelphic with both branches almost equally developed. Ovaries relatively small, reflexed, measuring 55-92 µm (anterior) and 65-95 µm (posterior), not reaching the oviduct-uterus junction; oocytes arranged in

single rows except near tip. Oviduct with clear demarcation of proximal part having sperms and *pars dilatata distalis*, joining ovary subterminally, measuring 60-85 µm (anterior) and 55-100 µm (posterior). Sphincter distinct at oviduct-uterus junction. Uterus a long, wide tube, proximal portion with distinct lumen and cuboidal cells, distal portion slightly narrower, measuring 135-185 µm (anterior) and 125-150 µm (posterior). Vulva a transverse slit. Vagina extending inwards about one half of corresponding body width; *pars proximalis vaginae* measuring 11-13 µm with almost convex walls, encircled by circular musculature; *pars refringens vaginae* with two triangular sclerotized pieces, each measuring 2.5-3 × 1.5-2 µm with a combined width *cw* = 6-7 µm and an additional pair of small cuticularised pieces are present between *pars distalis vaginae* and *pars refrengens vaginae*. *Pars distalis vaginae* short, about 1.5-2 µm with straight walls. Prerectum 2.3-3.5 times anal body widths long. Rectum 1.4-1.7 times anal body width long. Tail long, filiform, 11-15 times anal body width long. Caudal pores three on each side.

Male: Similar to female in general morphology except for the posterior region being more curved ventrally because of the presence of the copulatory muscles. Supplements, an adanal pair and 12-15 contiguous ventromedian, the middle two or three of them are distinctly spaced. Copulatory muscles well developed. Spicules dorylaimoid, slightly ventrally curved, 1.3-1.6 times anal body width long. Lateral guiding pieces about one fourth of spicule length. Prerectum about 5.5-6.1 anal body widths long, terminating far beyond the range of supplements. Tail short, conoid to obtusely rounded, about 0.8-0.9 times anal body widths long, with three caudal pores on each side.

***Type habitat and locality*:** Soil around the roots of the wheat crops (*Triticum aestivum L.*) from near Madrak, Aligarh, India.

***Type material*:** Holotype female on slide *Laimydorus paraconurus* sp.n/1; paratypes females and males on slides *L. paraconurus* sp.n/2-8; deposited with nematode collection of Department of Zoology, Aligarh Muslim University, India.

***Diagnosis and relationships*:** *Laimydorus paraconurus* sp. n. is characterized by having 1.5-1.6 mm long body; lip region offset by deep depression; 19-20 µm long odontostyle; "double" guiding ring; transverse vulva; *pars refringens vaginae* with two triangular sclerotization and an additional pair of small cuticularised pieces; long filiform tail and males with numerous contiguous supplements; the middle two or three of them are widely spaced.

In having small sized body, and smaller odontostyle and odontophore the new species comes close to *L. conurus* (Thorne, 1939) Siddiqi,1969, however, it differs from it in being comparatively longer and slender (*vs* L =1.1-1.4mm, a =31-38); lip region offset by deep depression (*vs* offset by slight depression); longer pharynx (*vs* 265-322 µm); transverse vulva (*vs* longitudinal); comparatively posterior vulva position (*vs* V= 44-48); in nature of vaginal sclerotization (*vs* drop shaped sclerotisation); shorter prerectum (*vs* 58-93 µm); longer female tail (*vs* 167-294 µm; c = 5.9-7.5, c'= 9.3-12); and number and arrangement of ventromedian supplements in males (*vs* contiguous, 18-21).

In the nature of arrangement of ventromedian supplements in males, the new species also comes close to *L. indicus* (Ahmad and Jairajpuri, 1982) Loof, 1996; *L. andrassyi* (Baqri and Jana, 1983) Loof, 1996; *L. simplex* (Baqri and Jana, 1983) Loof,

1996, but differs from the former in having shorter body (L= 2.0-2.5mm); lip region offset by deep depression (*vs.* continuous); amphid aperture simple (*vs* bilobed); shorter odontostyle (*vs* 24-28 µm); "double" guiding ring (vs. single); shorter odontophore (*vs* 28-31 µm); shorter pharynx (*vs* 421-476 µm); comparatively posterior vulva (*vs* 43-47 µm); shorter prerectum (*vs* 90-147 µm); shorter female tail (*vs* c'=14-20); shorter spicules (*vs* 40-41 µm); longer lateral guiding pieces (*vs* 8-10 µm) and fewer ventromedian supplements (*vs* 20-22).

From *L. andrassyi* (Baqri and Jana, 1983) Loof, 1996, it differs in having shorter and robust body (*vs* L = 3.0-3.9 mm; a = 49-80); shorter odontostyle (*vs* 23-29 µm); shorter odontophore (*vs* 23-32 µm); shorter pharynx (*vs* 539-627 µm; b = 5.5-6.4); comparatively posterior vulva (*vs* 40-46 µm); shorter prerectum (*vs* 162-212 µm); shorter female tail (*vs* 373-504 µm; c = 6.5-9.1; c'=15.5-20); shorter spicules (*vs* 45-53 µm); shorter lateral guiding pieces (*vs* 10-12 µm) and fewer ventromedian supplements (*vs* 17-19).

From *L. simplex*, it differs in having shorter and robust body (*vs* L = 2.3-2.7 mm; a = 46-51); shorter odontostyle (*vs* 23-27 µm); shorter odontophore (*vs* 30-34 µm); shorter pharynx (*vs* b = 5.3-5.4); comparatively posterior vulva (*vs* 45µm); shorter female tail (*vs* 357-406 µm; c = 6.1; c'=17-19); shorter spicules (*vs* 43-46 µm); and fewer ventromedian supplements (*vs* 20-22).

Table 10. Measurements of *Laimydorus paraconurus* sp. n.
(All measurements in µm except body length)

Characters	Holotype female	Paratype females	Paratype males
n		8	8
L (mm)	1.60	1.65±0.026 (1.60-1.68)	1.38±0.049 (1.28-1.45)
Body width at neck base	37	39±1.41 (37-40)	35.75±1.39 (34 -38)
Body width at mid body	37	39.66±0.47 (36-40)	35.87±1.85 (35-38)
Body width at anus/cloaca	20	21.66±1.24 (20-23)	25.25±0.66 (24-26)
a	43.24	43.15±1.65 (40.7-45.9)	38.72±`1.16 (35.6-41.6)
b	4.90	4.91±0.13 (4.7-5.1)	4.12±0.14 (3.8-4.3)
c	5.4	5.5±0.59 (4.9-6.9)	64.62±1.85 (61.0-2.72)
c`	14.7	13.69±1.66 (10.4 -15.2)	0.85±0.04 (0.8-0.9)
V	48.30	50.15±0.64 (47.6-50.7)	-
G_1	13.15	13.10±0.58 (12.2-13.9)	-
G_2	13.15	13.07±0.24 (12.7-13.4)	-
Lip region width	10.5	10.18±0.24 (10-10.5)	10.18±0.24 (10-10.5)
Lip region height	4.5	4.87±0.21 (4-4.5)	4.87±0.21 (4-4.5)
Amphid aperture	5	5.5±0.46 (5-6)	5.5±0.46 (5-6)
Odontostyle length	20	18.5±0.5 (18-19)	20±0.70 (19-21)
Odontophore length	25	25.62±0.48 (25-26)	25±0.70 (24-26)
Guiding ring from ant. end	11	12.66±1.24 (11-13)	12.5±0.5(12-13)
Nerve ring from ant. end	116	119.66±3.68 (114-123)	116.62±2.54 (114-122)
Neck length	326	332±5.71 (324-344)	336.75±11.47(315-355)
Expanded part of Pharynx	146	145±4.08 (140-153)	150.75±7.47 (133-158)
Cardia length	15	14±1.69 (12-17)	14±1.69 (12-17)
Anterior genital branch	210	218.16±9.6 (204-330)	-
Posterior genital branch	210	217.8±6.46 (210-225)	-
Vaginal depth	18	18.37±0.9 (17-20)	-
Vulva from anterior end	771	817.25±27.40 (771-857)	-
Prerectum length	60	61.25±10.23 (50-80)	148.62±5.36 (138-154)
Rectum length	31	33.37±1.79 (31-36)	-
Tail length	294	290.28±27.1 (230-320)	19.52±5.81 (20-22)
Spicules length	-	-	34.87±1.05 (34-37)
Lateral guiding pieces	-	-	8.5±0.5 (8-9)
Ventromedian supplements	-	-	12,15

Laimydorus indicus (Ahmad and Jairajpuri, 1982) Loof, 1996

= *Calodorylaimus indicus* Ahmad and Jairajpuri, 1982

(Fig. 11)

Measurements: (After Ahmad and Jairajpuri, 1982)

Females (n=8): L = 2.08-2.56 mm; body width at mid body = 46-58; body width at anus = 21-23 µm; a = 35-49; b = 4.3 -5.3; c = 5-7; c' = 14-20; V= 43-47; G_1 = 14-15; G_2 = 14-16; amphid aperture = 5-6 µm; odontostyle length = 24-28; odontophore length = 28-31 µm; guiding ring from anterior end = 14-16 µm; nerve ring from anterior end = 132-145 µm; neck length = 434-476 µm; cardia length = 22-25 µm; prerectum length = 90-147 µm; rectum = 37-42 µm; vaginal depth = 20-22 µm; tail length = 326-482 µm.

Males (n=8): L = 1.6-2.0 mm; body width at midbody= 38-48 ; body width at cloaca = 23-25; a = 29-49; b = 3.9-4.6; c = 98-118; c' = 0.6-0.7; T = 54-57; odontostyle length = 24-28 µm; odontophore length = 28-29 µm; neck length = 424-444 µm; prerectum length = 180-246 µm; spicule length = 40-45 µm; lateral guiding pieces = 8-10 µm; ventromedian supplements = 20-22; tail length = 16-17 µm.

Measurements of the paratypes examined:

Females (n=2): L = (2.3,2.5mm); body width at neck base = (52,55µm); body width at midbody = (56,58 µm); body width at anus = (23,25µm); a = (40.7,45.5); b = (5.2,5.4); c = (5.2,5.8); c'= (18,19); V = (45.5,46.1); G_1 = (12.9,13.3); G_2 = (13.1,14.8); lip region width = (10,11µm); lip region height = (4.5,5µm); amphid aperture = (5.5,6.0µm); odonotostyle length = (27,28µm); odontophore length = (31,32µm); guiding ring from anterior end = (15,16µm); expanded part of pharynx = (226,238µm); nerve ring from anterior end = (131,136µm); neck length = (449,465µm); cardia length = (23,24µm); anterior genital branch = (324,356µm); posterior genital branch = (327,410µm); vaginal depth = (24,25µm); vulva from anterior end = (1135,1270µm); prerectum length = (124,138µm); rectum length = (35,39µm); tail length = (438,450µm).

Males (n=2): L = (1.9,2.0mm); body width at neck base = (40,43µm); body width at midbody = (42,46µm); body width at cloaca = (24,25µm); a= (43.8,46.2); b = (4.4,4.6); c = (112.1,114.2); c'= (0.6,0.7); lip region width = (10,10.5µm); lip region height = (4,5µm); amphid aperture = (5,6µm); odontostyle length = (24,26µm); odontophore length = (29,30µm); guiding ring from anterior end = (14.4,15.5µm); expanded part of pharynx = (220,227µm); nerve ring from anterior end = (126,133µm); neck length = (435,439µm); cardia length = (21,23µm); prerectum length = (198,209µm); spicules length = (42,45µm); lateral guiding pieces = (9,10µm); ventromedian supplements = (21,22); tail length = (17,18µm).

Lip region almost continuous. Amphid aperture appearing bilobed. Odontostyle 2.4-2.8 lip region widths long. Guiding ring single. Odontophore 1.1-1.2 times the odontostyle length. Expanded portion of oesophagus occupying 50-52% of total oesophageal length. Female reproductive system amphidelphic. Ovaries small, reflexed measuring 55-75 µm (anterior) and 55-80 µm (posterior), containing many oocytes, not reaching upto the oviduct-uterus junction. Oviduct with no clear demarcation of proximal part and *pars dilatata distalis*, measuring 100-116 µm (anterior) and 110-117 µm (posterior). Sphincter indistinct at oviduct-uterus junction; a slight demarcation is present. Uterus become demarcated into two distinct zones; proximal part with well developed lumen and middle part with cuboidal cells at its centre gradually narrowing to a distal portion measuring 224-240 µm (anterior) and 210-300 µm (posterior). Vulva transverse, vagina thick walled, *Pars proximalis vaginae* with convex walls, drop shaped cuticularized pieces are present at vulva-vagina junction. Tail very long filiform, 18-19 anal body widths long with acute terminus.

Males with ventromedians arranged in two groups of 9-10 each, with 1-2 poorly developed in between. Spicules about 1.7-1.8 anal body-widths long. Prerectum about eight anal body widths long, reaching well beyond range of supplements. Tail short, convex-conoid, 0.6-0.7 anal body widths long with 2-3 caudal pores on each side.

Distribution: From soil around roots of paddy *Oryza sativa* L. from Imphal, Manipur and jute, *Corcoris* sp. from Howrah, West Bengal, India. No further record available.

Type specimens: Two paratype female and males each examined, available in the nematode collection of Department of Zoology, Aligarh Muslim University, India

Relationship: Ahmad and Jairajpuri (1982) described this species as *Calodorylaimus indicus*. Loof (1996) transferred it to *Laimydorus* while synonymizing the genus *Calodorylaimus* Andrássy, 1969. *L. indicus* is closely related to *L octo* (Andrassy, 1969) Loof, 1996 and *L. simplex* (Baqri & Jana, 1982) Loof, 1996 but differs from them in having smaller body, in the shape of the lip region, in having shorter odontostyle, longer oesophagus, posterior vulva and smaller spicules (L = 3.0-3.6 mm; b = 6.0; V =36-37; odontostyle = 32-35 μm; and spicules = 57-60 μm in *C octo*). It differs from *L.simplex* in having single lobed amphidial aperture (*vs* amphid divided in two parts); single guiding ring (*vs* double); and longer odontostyle (*vs* 23-27μm).

Material examined: Paratype females and males available in the nematode collection of Zoology Department, Aligarh was available to study. Paratypes examined corresponds fully with the original description.

Laimydorus dhanachandi Jairajpuri and Ahmad, 1983

(Fig. 11)

Measurements (After Jairajpuri and Ahmad, 1983)

Females (n=4): L = 2.80-3.04 mm; Body width at mid body = 40-48; body width at anus = 21-24 μm; a = 65-74; b = 5.0-6.0; c = 17-20; c'=6.5-7.6; V= 47-48; G_1= 9-25; G_2 = 9-28; amphid aperture = 7-9 μm; lip region width = 15-18 μm; lip region height = 5-6 μm; odontostyle length = 23-28 μm; odontophore length = 28-38 μm; guiding ring from anterior end = 14-16 μm; nerve ring from anterior end = 130-155 μm; neck length = 500-554 μm; cardia length = 8-10 μm; prerectum length = 160-171 μm; rectum length = 31-35 μm; tail length = 150 -365 μm.

`***Males (n=4)***: L = 2.62-3.04 mm; Body width at mid body =39-46; a =74-82; b = 5.1-5.4; c = 175-202; T = 56-67; odontostyle length = 22-25 µm; odontophore length = 28-30 µm; neck length = 503-594 µm; spicules length = 37-42 µm; lateral guiding pieces = 9-12 µm; ventromedian supplements = 15 -16.

Measurements of the paratypes examined:

Females (n=2): L = (2.8,2.9mm); body width at neck base = (42,45µm); body width at midbody = (42,46 µm); body width at anus = (22,24µm); a = (65,66); b = (5.5,5.6); c = (18.4,18.9); c'= (6.5,7); V = (46,46.7); G_1 = (10.5,11.7); G_2 = (11.1,11.4); lip region width = (16,17.5µm); lip region height = (4.5,5.5µm); amphid aperture = (8.5,9.0µm); odonotostyle length = (27,28µm); odontophore length = (34,37µm); guiding ring from anterior end = (15,16µm); expanded part of pharynx = (248,275µm); nerve ring from anterior end = (128,139µm); neck length = (511,532µm); cardia length = (8,9µm); anterior genital branch = (322,334µm); posterior genital branch = (316,342µm); vaginal depth = (22,25µm); vulva from anterior end = (1306,1394µm); prerectum length = (164,173µm); rectum length = (32,36µm); tail length = (154,158µm).

Males (n=2): L = (2.9,3.0mm); body width at neck base = (40,43µm); body width at midbody = (40,46µm); body width at cloaca = (30,32µm); a= (68.1,73.5); b = (5.4,5.5); c = (170.3,173); c' = (0.5); lip region width = (16,17µm); lip region height = (5,5.5µm); amphid aperture = (8,9µm); odontostyle length = (24,26µm); odontophore length = (29,30µm); guiding ring from anterior end = (14.4,15.5µm); expanded part of pharynx = (264,279µm); nerve ring from anterior end = (139,1146µm); neck length = (535,552µm); cardia length = (9,11µm); prerectum length = (198,209µm); spicules length = (39,41µm); lateral guiding pieces = (11,12µm); ventromedian supplements = (15,16); tail length = (17,18µm).

Lip region truncate, almost continuous but slightly wider than adjoining body. Odontostyle attenuated and about 1.6 µm lip region-widths long. Guiding ring 'double'. Odontophore 1.2-1.3 times the odontostyle length. Expanded portion of oesophagus occupying 48-51% of total oesophageal length. Female reproductive system amphidelphic. Ovaries large, reflexed containing many oocytes, not reaching upto the oviduct-uterus junction. Sphincter distinct at oviduct-uterus junction. In fertilized females the uterus becomes demarcated into three distinct zones; proximal part is with well developed lumen; middle part well developed; full of sperms and

forming a spermatheca-like structure at its distal part but the same differentiation is not so evident in unfertilized females. Vulva very small longitudinal (or pore like) Vagina extending about half-way across the body; *pars proximalis vaginae* with convex walls; triangular shaped cuticularized pieces present at vulva-vagina junction Tail long filiform, 6.5-7 anal body-widths long.

Male having 15-16 closely packed but non-contiguous ventromedian supplements. Spicules about 1.2-1.3 anal body widths long. Prerectum 6.5-6 6 anal body widths long extending well above the range of the supplements. Tail short conoid, 0.5 anal body widths long with well developed papillae.

Relationship: *L. dhanachandi* is distinctive because of its attenuated odontostyle and flattened lip region with thickened cuticle. Jimenez-Guirado and Cadenas (1985) transferred this species to his newly proposed genus *Chrysodorus* which they erected mainly on the basis of the presence of a comparatively attenuated odontostyle and a flattened lip region in *L dhanachandi* and a new species (*Chrysodorus longicaudatus*) which they described from Spain. Jairajpuri and Ahmad (1992) as well as Loof (1996) considered *Chrysodorus* a synonym of *Laimydorus*

Distribution: Jairajpuri and Ahmad (1983) described this species from soil around roots of grasses from Kanchung Hills, Imphal, Manipur and also from soil around roots of paddy, *Oryza sativa* L., from near Manguesh temple, Ponda, Goa, India.

Material examined: Paratype females and males available in the nematode collection of Zoology Department, Aligarh was available to study. Paratypes examined corresponds fully with the original description.

Laimydorus multialaeus (Khera, 1970) Baqri, 1985

= *Dorylaimus multialeus* Khera, 1970

(Fig. 12)

Measurements: (After Khera, 1970)

Females (n=3): L = 2.42-2.58 mm; a = 35-38, b = 5.3-5.9, c = 10.0-12.4, V = 43-47; amphid aperture = 8-9 µm; odontostyle length = 25-28 µm; odontophore length = 28-31 µm; guiding ring from anterior end = 14-15 µm, nerve ring from anterior end = 125-138 µm; prerectum length = 123-180 µm; rectum length = 37-28 µm; vaginal depth = 23-25 µm; tail length = 200-256 µm..

Males (n=2) : L = 2.01 – 2.17 ; a = 37 -39 ; b = 4.4 - 4.8 ; c = 96-109 ; T = 64-66 ; c' = 0.7-0.8.

Measurements (After Ahmad and Ahmad, 2002)

Females (n=5): L = 2.35-2.88 mm; body width at neck base = 69-85 µm; body width at anus = 25-28 µm; a = 33-42; b = 5.5-6.1; c = 9.8-12.8; c' = 8.1-10.5; V = 44-47; G_1 = 15-19, G_2 = 17-19; lip region width = 14-15 µm; lip region height = 7-8 µm; amphid aperture = 7-8 µm; odontostyle length = 27-28 µm; odontostyle aperture = 10-11 µm; odontophore length = 28-29 µm; guiding ring from anterior end = 15-16 µm; nerve ring from anterior end = 159-169 µm; neck length = 431-490 µm; expanded part of pharynx = 189-229 µm; cardia length = 22-23 µm; anterior genital branch= 429-531; posterior genital branch = 454-539; vaginal depth = 42-43 µm; vulva from anterior end = 1066-1284 µm; prerectum length = 131-177 µm; rectum length = 37-41 µm; tail length = 208-293 µm.

Males (n=2) : L = 1.9- 2.1 mm; body width at neck base = 57-64 µm; body width at anus = 25-26 µm; a = 30-38; b = 4.2-4.8; c = 108-113; c' = 0.7; T= 44-47; lip region width = 13-14 µm; lip region height = 8-9 µm; amphid aperture = 7-8 µm; odontostyle length = 28-29 µm; odontostyle aperture = 10-11 µm; odontophore length = 28-29 µm; guiding ring from anterior end = 15-16 µm; nerve ring from anterior end = 155-167 µm; Neck length = 446-447 µm; expanded part of pharynx = 215-231 µm; cardia length = 22-23 µm; prerectum length = 266-275 µm; spicules length = 48-49 µm; lateral guiding pieces = 14-15 µm; ventromedian supplements = 25-26; tail length = 18-19 µm.

Lip region offset by a depression, with slightly raised labial papillae. Amphids stirrup-shaped, their aperture about half of the corresponding body width wide. Odontostyle 1.8-2.0 lip region widths long. Guiding ring "double". Reproductive

system amphidelphic. Vulva a small longitudinal slit; vagina about half of the corresponding body width deep. *Pars proximalis vaginae* with convex walls; *pars refringens vaginae* with small rounded cuticularized pieces. Tail long, filiform, 8-10 anal body widths long.

Male: Supplements, an adanal pair and 25-26 ventromedians in a contiguous series. Spicules dorylaimoid, 1.8-1.9 anal body widths long; lateral guiding pieces rod-like, about one-third of spicule length. Prerectum 10-11 anal body widths long, extending beyond the range of supplements. Tail varies from bluntly rounded to slightly bluntly conoid, 0.7 anal body width long, with two caudal pores on each side.

Relationship: *L. multialaeus* (Khera, 1970) Baqri, 1985 is close to *L. baldus* Baqri and Jana, 1982 but differs in the absence of pseudo "Z" organs and presence of spermatheca-like structure in uteri and slightly wider and differently shaped amhids.

Distribution: Khera (1970) described this species as *Dorylaimus multialaeus* from the banks of a freshwater drain in Lucknow, India. Baqri (1985) transferred it to *Laimydorus*. Ahmad and Ahmad (2002) redescribed this species from soil around roots of water weeds from near Engineeing College, Aligarh Muslim University, Aligarh, India.

Material examined: Both male and female specimens available in the nematode collection of Zoology Department was available for study..

Laimydorus papillatus Ahmad and Ahmad, 2002
(Fig.12)

Measurements (After Ahmad and Ahmad, 2002)

Female (n=2) : L = 2.4-2.7 mm; body width at neck base = 49-67 μm; body width at anus = 27-30 μm; a = 40-50; b = 4.0-4.4; c = 5.6-6.3; c'= 13.8-15.8; V = 45-46; G_1 = 12-13; G_2 = 13-14; lip region width = 16-18 μm; lip region height = 7 μm; amphid aperture = 6-7 μm; odontostyle length = 33-35 μm; odontophore length = 30-33 μm; guiding ring from anterior end = 21 μm; expanded part of pharynx = 323-339 μm; nerve ring from anterior end = 156-158 μm; neck length = 616 μm; cardia length = 24-26 μm; anterior genital branch = 322-354 μm; posterior genital branch = 323-404 μm; vaginal depth = 32-33 μm; vulva from anterior end = 1130-1246 μm; prerectum length = 141-142 μm; rectum length = 35-50 μm; tail length = 427-439 μm.

Male (n=1) : L = 2.4 mm; body width at neck base = 62 μm; body width at cloaca = 31 μm ; a =39; b = 4.2; c = 102 ; c' = 0.7; T = 55; lip region width = 16μm ; lip region height = 8 μm; amphid aperture = 7 μm; odontostyle length = 35 μm; odontophore length = 31 μm; guiding ring from anterior end = 21 μm; expanded part of pharymx = 323 μm; nerve ring from anterior end = 150 μm; neck length = 569 μm; cardia length = 22 μm; prerectum length = 28 μm; spicules length = 48 μm; lateral guiding pieces = 11 μm; ventromedian supplements = 22; tail length = 24 μm.

Measurements of the paratypes examined:

Females (n=2): L = (2.4,2.7 mm); body width at neck base = (54,67μm); body width at midbody = (58,68 μm); body width at anus = (29,32μm); a = (40.4,43.0); b = (4.0,4.4); c = (5.7,6.2); c'= (13.7,15); V = (45.5,46.1); G_1 = (12.9,13.3); G_2 = (13.1,14.8); lip region width = (16,17μm); lip region height = (7,7.5μm); amphid aperture = (6.5,7.0μm); odonotostyle length = (34,35μm); odontophore length = (30,32μm); guiding ring from anterior end = (20,21μm); expanded part of pharynx = (326,338μm); nerve ring from anterior end = (155,159μm); neck length = (618,620μm); cardia length = (25,27μm); anterior genital branch = (324,356μm); posterior genital branch = (327,410μm); vaginal depth = (34,35μm); vulva from anterior end = (1135,1270μm); prerectum length = (141,144μm); rectum length = (45,50μm); tail length = (435,441μm).

Males (n=2): L = (2.2,2.4mm); body width at neck base = (62,67μm); body width at midbody = (65,69μm); body width at anus = (33,37μm); a= (33,35); b = (3.9,4.0); c = (102,106); c'= (0.6); lip region width = (16,17μm); lip region height = (7,8μm); amphid aperture = (7,7.5μm); odontostyle length = (35,36μm); odontophore length = (31,32μm); guiding ring from anterior end = (21,22μm); expanded part of pharynx = (310,323μm); nerve ring from anterior end = (150,155μm); neck length =

(564,615μm); cardia length = (22,26μm); prerectum length = (284,289μm); rectum length = (24,27μm); spicules length = (48,51μm); lateral guiding pieces = (11,13μm); ventromedian supplements = 22; tail length = (22,23μm).

Lip region offset by a depression, slightly wider than adjoining body, about one-third of body width at base of pharynx. Both dorsal and ventral body pores well developed, ending into papillae. Ventral papillae 25; eleven in pharyngeal region, seven between pharynx and vulva and seven between vulva and anus. Dorsal papillae 27; fifteen in pharyngeal region, twelve between pharyngeal base to tail. Odontostyle 2.0-2.1 lip region widths long. Guiding ring "double". Odontophore 0.8-0.9 times the odontostyle length. Expanded portion of pharynx occupying about 53-55% of total neck length. Reproductive system amphidelphic. Vulva longitudinal. A pair of vulval papillae present both anterior and posterior to vulva. Ovaries short, reflexed, measuring 105-115 μm (anterior) and 120-130 μm (posterior), reaching almost upto the oviduct-uterus junction. Oviduct with no clear demarcation of proximal part and *pars dilatata distalis*. Sphincter indistinct at oviduct-uterus junction; a slight demarcation is present. Uterus become demarcated into two distinct zones; proximal part with well developed lumen and gradually narrowing to a distal portion Vagina about 50-55% of corresponding body width deep. *Pars proximalis vaginae* with straight walls. Drop-shaped cuticularized pieces present at vulva-vagina junction. Tail very long, filliform, 14 -15 anal body widths long, with 2-3 caudal pores on each side.

Males with 22 contiguous ventromedian supplements. Spicules 1.3-1.4 anal body widths long; lateral guiding pieces rod-like, about one-fourth of spicule length. Prerectum 7.8-8.6 anal body widths long, extending beyond the range of supplements.

Tail bluntly rounded, 0.6 anal body width long, with three or four well developed mammiform caudal papillae.

Relationship: *Laimydorus papillatus* Ahmad & Ahmad, 2002 is distinctive in having characteristically well developed, mammiform dorsal and ventral pores along the entire body length.

Distribution: Ahmad and Ahmad (2002) described this species from soil around roots of black gram (*Vigna mungo L.*) from Alwayns, Margoa district, Karnataka state, India.

Material examined: Paratype females and males deposited in the nematode collection of Department of Zoology, Aligarh were available for study. Paratypes examined corresponds fully with the original description.

Laimydorus vulvapapillatus Mushtaq and Ahmad, 2006

(Fig. 13)

Measurements (After Mushtaq and Ahmad, 2006)

Females (n=10): L = (1.98±77.8) 1.8-2.10 mm; body width at midbody = (65.2±4.2) 58.5-70.5 µm; body width at anus = (30.8±1.3) 28-32 µm; a = (30.5±1.4) 28.2-32.8 µm; b= (4.7±0.2) 4.4-5.0; c= (16.3±2.1) 13.5-20.78; c'= (3.9±0.4) 3.3-4.6; V= (48.3.±1.0) 46.7-49.3; G_1= (17.6±1.2) 16.6-20.0; G_2= (17.6±0.5) 16.8-18.5; lip region width= (16.9±0.5) 16.0-17.5 µm; amphid aperture = (6.4±0.6) 5.5-7.0 µm; odonotostyle length = (26.1 ± 1.0) 25-28 µm; odontophore length = (38±1.5) 36-40 µm; guiding ring from anterior end = (15.4±1.4) 14.0-17.5; expanded part of pharynx = (204.1±5.7) 196-216 µm; nerve ring from anterior end = (130.6±2.8) 127-136 µm; neck length = (415.6±9.4) 400-434 µm; cardia length = (31.3±4.3) 28–42 µm; anterior genital branch = (348.2±29.6) 305-395 µm; position genital branch = (348.7±12.1) 322-365; vaginal depth = (25.2±3.6) 21-30 µm; vulva from anterior end = (958±30.8) 896-990 µm; prerectum length = (119.3±15.5) 100-150 µm; rectum length = (42.4±3.6) 38-45 µm; tail length = (123.1±14.9) 95-150 µm.

Males (n=5): L = (1.9±87.6) 1.72-1.95 mm; body width at midbody = (64.1±3.4) 61 –68 µm; body width at anus = (34.6±3.4) 29-39 µm; a= (29.2±1.7) 27.2-32.1; b=

(4.5±0.2) 4.2-4.6; c= (80.9±6.1) 72.4-87.2; c'= (0.63±0.05) 0.55-0.68; lip region width = (1.69 ± 0.1) 16.5-17.5 µm; amphid aperture = (5±0.5) 5-6 µm; odontostyle length = (26.3 ±0.9) 25-27 µm; odontophore length = (40.3±0.8) 39-41 µm; guiding ring from anterior end = (15.16±0.62) 14.5-16.0 µm; expanded part of pharynx = (209.5±1.6) 208-212 µm; nerve ring from anterior end = (128.2±7.4) 120-140 µm; neck length = (415.2±8.52) 404-424 µm; cardia length = (42.0±15.2) 31-68 µm; prerectum length = (200.8±16.5) 170-220 µm; rectum length = (48.2±2.4) 45-51 µm; spicules length = (57±0.81) 56-58 µm; lateral guiding pieces = (15±0.81) 13-16 µm; ventromedian supplements = 17-19; tail length = (23.2±2.3) 20-27 µm.

Measurements of the paratypes examined:

Females (n=4): L = (1.98±55.5) 1.9-2.0 mm; body width at neck base = (63.5±3.8) 58-68; body width at midbody = (66.5±4.6) 61-72 µm; body width at anus = (31.25±0.82) 30-32 µm; a = (29.9±1.5) 28.0-32.2 µm; b = (4.7±0.1) 4.5-4.9; c = (15.97±1.76) 14.5-19; c'= (4.03±0.5) 3.1-4.5; V (48.5±0.2) 48.3-48.9; G_1= (17.0±0.8) 16.0-18.2; G_2= (17.6±0.3) 17.1-18.0; lip region width = (16.6±0.4) 16.0-17.0 µm; lip region height = (4.62±0.4) 4-5; µm amphid aperture = (6.5±0.5) 6.0-7.0 µm; odonotostyle length = (27.0 ± 1.2) 25-28 µm; odontophore length = (38±0.7) 37-39 µm; guiding ring from anterior end = (16.75±0.7) 16.0-17.5; expanded part of pharynx = (203.751±4.14) 200-210 µm; nerve ring from anterior end = (130.6±2.8) 127-136 µm; neck length = (420.5±5.7) 400-430 µm; cardia length = (33±3.6) 28–38 µm; anterior genital branch = (338.2±23.8) 305-370 µm; position genital branch = (349.5±13.1) 335-365; vaginal depth = (23.2±9.3) 21-25 µm; vulva from anterior end = (963±23.6) 930-990 µm; prerectum length = (119.5±12.7) 100-135 µm; rectum length = (39.7±1.4) 38-42 µm; tail length = (125.7±14.8) 100-135 µm.

Males (n=4): L = (1.93±0.05) 1.93-1.94 mm; body width at neck base = (67.6±2.0) 65-70; body width at midbody = (68.6±0.9) 68-70 µm; body width at anus = (35.3±2.8) 32-39 µm; a= (28.2±0.4) 27.5-28.5; b = (4.6±0.1) 4.5-4.8; c = (74.6±2.3) 71.9-77.7; c'= (0.73±0.07) 0.66-0.84; lip region width = (16.8 ± 0.4) 16.5-17.5 µm; lip region height = (4.83±0.2) 4.5-5; amphid aperture = (6.5±0.5) 6-7 µm; odontostyle length = (26.3 ±0.4) 26-27 µm; odontophore length = (40.8±0.8) 39-41 µm; guiding ring from anterior end = (16.66±0.47) 16-17µm; expanded part of pharynx = (206±1.6) 204-208 µm; nerve ring from anterior end = (128.2±7.4) 120-140 µm; neck length = (415.6±8.73) 404-425 µm; cardia length = (30.66±0.9) 30-32 µm; prerectum length = (213.6±6.34) 205-220 µm; rectum length = (48.2±2.4) 45-51 µm; spicules length = (57±0.81) 56-58 µm; lateral guiding pieces = (15±0.81) 14-16 µm; ventromedian supplements = 18-19; tail length = (26±0.81) 25-27 µm.

Lip region offset by depression, about three times as wide as high or about one-fourth of body width at neck base. Labial papillae slightly projecting above labial

contour. Amphids cup-shaped. Odontostyle 1.4-1.7 times lip region widths long. Guiding ring "double". Odontophore about 1.3-1.5 times the odontostyle length. Expanded part of pharynx occupying about 47-50% of total neck length. Female genital system amphidelphic. Uterus with Z-differentiation. Vulva longitudinal; cuticle wrinckled (irregular) both anterior and posterior to vulva, some times pores as deep as the thickness of the cutlcle. Vagina extending inward about one-third of the corresponding body width; *pars proximalis vaginae* with straight or convex walls, encircled by circular muscles; *pars refringens vaginae* with four sclerotized pieces in lateral view, outer two drop-shaped, the middle two almost rectangular. Tail elongate, 3.1-4.5 times anal body widths long; hyaline part about 17-28% of total tail length. Caudal pores two on each side.

Male with 18-19 contiguous ventromedian supplements. Spicules 1.4-1.8 times anal body widths long. Prerectum about 5.8-6.4 anal body widths long terminating above the range of supplements. Tail bluntly rounded, 0.6-0.8 times anal body width long. Caudal pores two to three on each side.

Relationships: *L. vulvapapillatus* Mushtaq & Ahmad, 2006 is characterized by the presence of wrinckled cuticle (irregular) both anterior and posterior to vulva, some times pores as deep as the thickness of the cutilcle. It is closely related to *L.uterinus* Loof, 1996; *L.mangalorensis* Ahmad and Ahmad, 2002; *L.flevensis* Loof, 1996 and *L.parabastiani* , but differs from them in definite morphological features.

Distribution: Mushtaq and Ahmad (2006) described this species from soil around the roots of thorny plants, locally called as chhermongh, near Shahi Hamdam Mosque, Shey, Leh, Ladakh, India.

Material examined: Type material deposited in the nematode collection of Zoology Department, Aligarh was available for study. Paratypes examined corresponds fully with the original description.

Laimydorus vulvastriatus Baniyamuddin and Ahmad, 2006
(Fig.13)

Measurements: (After Baniyamuddin and Ahmad, 2006)

Females (n=5): L = (1.67±0.1) 1.55-1.81mm; body width at neck base = (46±2) 43.5-49.0 µm; body width at midhody = (5.1±2.7) 47.5-55.5; body width at anus = (28±3) 26.5-31.5 µm; a= (33±1.15) 30-35; b= (4.0±0.2) 3.6-4.1; c= (10±0.9) 9.0-11.3; c'= (6±0.8) 5.0-6.8; V= (52±1) 51-53; G_1= (14.5±1) 12.5-15.5; G_2= (14.5±2.3) 11 08; lip region width = (14±0.3) 13.5-14.0 µm; lip region height = (5.5±0.5) 5-6 µm; amphid aperture = (9±0.9) 8.5-10.5 µm; odontostyle length = (35±1.2) 35-38 µm; odontophore length = (26±1.5) 25-28 µm; guiding ring from anterior end = (17.5±1.3) 16-19 µm; epanded part of pharynx = (188±13) 158-189 µm; nerve ring from anterior end = (146±5.5)140-15 µm; neck length = (422±16.5) 401-445 µm; cardia length = (33.5±4.5) 29-41 µm; anterior genital branch = (244±31.5) 196-276 µm; posterior genital branch = (245±43.5) 174-296 µm; vaginal depth = (24±2.5) 19.5-27.5 µm; vulva from anterior end = (870±61.5) 792-940 µm; preretum length = (77.5±22) 56.5-116 µm; rectum length = (44±2) 41.0-46.5 µm; tail length (166±19.5) 158-192 µm.

Males (5): L= (1.46±0.01) 1.32-1.57 mm; body width at neck base = (41±2) 39.0-44.5 µm; body width at midbody = (43±2.5) 40.0-46.5 µm; body width at anus = (31±1) 30.0-31.5 µm; a= (34±2) 32-36; b= (35±0.1) 3.3-3.6; c= (58±5.5) 50.5-63; c = (0.82±0.04) 0.75-0.86; lip region width = (14±0.35) 13.5-14.0 µm; lip region height = (6±0.33) 5.5-6.0 µm; amphid aperture = (9±0.40) 8.5-9.5 µm; odontostyle length = (34.5±0.60) 34.0-35.5 µm; odontophore length = (26.5±0.39) 26-27 µm; guiding ring from anterior end = (16±0.5) 15.0-16.5 µm; expanded part of pharynx = (176±11.2) 163-190 µm; nerve ring from anterior end = (148±4.2) 144-155 µm; neck length =(409±18.8) 389-435 µm; cardia length = (34±5.4) 28.5-415 µm; prerectum length = (112±17) 88-126 µm; rectum length = (54±4) 47-58 µm; spicules length = (54.5±0.35) 54-55 µm; lateral guiding pieces = (14.5±0.36) 14.5-15 µm; ventromedian supplements = 11; tail length = (25±0.95) 23.5-26.0 µm.

Measurements of the paratypes examined:

Females (n=4): L = (1.81±0.04) 1.64-1.89 mm; body width at neck base = (49±0.70) 48-50 µm; body width at midhody = (52.7±2.5) 50-56; body width at anus

= (28.7±1.6) 26-30 µm; a = (34.3±0.3) 32.8-35.0; b= (4.2±0.7) 3.9-4.8; c = (11.3±0.8) 9.9-12.0; c' = (5.62±0.5) 5.1-6.5; V = (48.6±1.9) 45.3-50.4; G_1= (14.5±1) 12.5-15.5; G_2 = (14.5±2.3) 11-15; lip region width = (14±0.5) 13.5-14.5 µm; lip region height = (5.5±0.5) 5-6 µm; amphid aperture = (9.75±0.2) 9.5-10 µm; odontostyle length = (34.75±0.8) 35-36 µm; odontophore length = (27.5±0.5) 27-28 µm; guiding ring from anterior end = (19.5±0.5) 19-20 µm; expanded part of pharynx = (178.6±13.4) 160-191 µm; nerve ring from anterior end = (146±5.5)140-150 µm; neck length = (425±26.9) 390-465 µm; cardia length = (37.3±2.4) 34-40 µm; anterior genital branch = (244±31.5) 196-276 µm; posterior genital branch = (245±43.5) 174-296 µm; vaginal depth = (24±2.5) 19.5-27.5 µm; vulva from anterior end = (870±61.5) 792-940 µm; preretum length = (82.7±12.8) 65-100 µm; rectum length = (43.2±2.1) 40-46 µm; tail length (161.7±16.9) 145-190 µm.

Males (3): L= (1.43±56.92) 1.37-1.51 mm; body width at neck base = (41.3±2.8) 38-45 µm; body width at midbody = (44±1.6) 42-46 µm; body width at anus = (31±0.8) 30.0-32.0 µm; a= (32.7±2.3) 30.9-36; b= (3.5±0.1) 3.3-3.7; c = (56.2±2.4) 52.9-58.8; c' = (0.82±0.02) 0.80-0.86; lip region width = (14±0.40) 13.5-14.5 µm; lip region height = (5.5±0.4) 5.0-6.0 µm; amphid aperture = (9.66±0.2) 9.5-10 µm; odontostyle length = (34.6±0.47) 34.0-35.0 µm; odontophore length = (26.3±0.4) 26-27 µm; guiding ring from anterior end = (16.5±0.4) 16-17 µm; expanded part of pharynx = (176±6.97) 168-185 µm; nerve ring from anterior end = (148±4.2) 144-155 µm; neck length =(408.33±6.23) 400-415 µm; cardia length = (35.3±5.3) 29-42 µm; prerectum length = (107.6±17) 90-121 µm; rectum length = (54±4) 47-58 µm; spicules length = (54.3±0.47) 54-55 µm; lateral guiding pieces = (14.3±0.47) 14-15 µm; ventromedian supplements = 11; tail length = (25.66±0.47) 25.0-26.0 µm.

Lip region truncate, almost continuous with body, about one-third of body width at neck base. Amphids stirrup-shaped. Odontostyle 2.4 -2.6 times lip region width long, its aperture about one-sixth to one-fifth of its length. Guiding ring "double".. Odontophore 0.75-0.81 times the odontostyle length. Expanded portion of oesophagus occupying 41-44% of total oesophageal length. Genital system amphidelphic; both the sexual branches almost equally developed. Vagina thick walled, about half of corresponding body width deep. *Pars proximalis vaginae* with straight walls encircled by circular musculature; *pars refringens vaginae* with triangular sclerotisation, a well developed intermediate area visible between two

sclerotised pieces. Vulva longitudinal. Advulval cuticular ornamantation present both anterior and posterior to vulva. Tail elongate, filliform, 5.1-6.5 anal body width long, with three caudal pores on each side.

Male with 11 contiguous ventromedian supplements. Spicules 1.7-1.8 times anal body widths long. Prerectum 2.8-4.0 anal body widths long, terminating within the range of supplements. A tongue-like structure, measuring 25-28 μm, extending into the lumen of intestine from prerectum-intestine junction. Tail bluntly rounded, 0.80 - 0.86 anal body width long, with three caudal pores on each side.

Relationship: *L. vulvastriatus* is characteristic for its truncate lip region, large odontostyle, "double" guiding ring, longitudinal vulva, advulval ornamentation both anterior and posterior to vulva and prerectum in males terminating within the range of supplements. It is closely related to *L. vacillans* Loof, 1996; *L. renwicki* (van der Linde, 1938) Andrássy, 1969; *L. minimus* Baqri, 1991; and *L. esquiveli* Ahmad & Shaheen, 2004, but differs from them in definite morphological features.

Distribution: Baniyamuddin & Ahmad (2006) reported this species from soil around the roots of forest trees from natural forest area, Namsai, Lohit district, Arunachal Pradesh, India.

Material examined: Type material deposited in the nematode collection of Zoology Department, Aligarh was available for study. Paratypes examined corresponds fully with the original description.

Laimydorus pseudostagnalis (Micoletzky, 1927) Siddiqi, 1969

= *Dorylaimus pseudostagnalis* Micoletzky, 1927
= *Mesodorylaimus pseudostagnalis* (Micoletzky, 1927) Goodey, 1963
= *Dorylaimus imamurai* Thorne and Swanger, 1936
= *Dorylaimus selangorensis* De Man, 1929

Measurements (After Ahmad and Jairajpuri, 1982)

Females (n=5) : L = 2.35-2.76 mm; body width at mid body = 50-56; body width at anus = 26-28 μm; a = 45-47; b = 4.8-5.4; c = 9-10; c' = 9-10; V = 44-48; G_1 = 15-17, G_2 = 15-18; odontostyle length = 26-27 μm; odontophore length = 27-29 μm; neck length = 481-507 μm; prerectum length = 128-202 μm ; rectum length = 36-51 μm, tail length = 259-274 μm.

Males (n=2) : L = 2.21-2.47 mm; body width at mid body = 48-55; body width at cloaca = 40-46 μm; a = 40-46; b = 4.4-4.7; c = 96-98; c' = 1.30-1.34; T = 61-63; odontostyle length = 27 μm; odontophore length = 29 μm; neck length = 496-518 μm; prerectum length = 390-412 μm ; spicules length = 49-50 μm ; ventromedian supplements = 26-27; tail length = 23-24 μm.

Lip region set off by depression, odontostyle one-fourth as wide and twice as long as the width of the lip region; guiding ring 'double'; vulva longitudinal; supplements 25; four subventral papillae between the cloaca and the postereior supplement is present in males.

Distribution: Micoletzky (1927) described this species as *Dorylaimus pseudostagnalis* from Russia. Ahmad and Jairajpuri (1982) recorded this species from the soil around the roots of water weeds from Kandla port, Gandhidham, Gujarat state, India.

Material examined: No specimen was available for study.

Laimydorus finalis Thorne, 1975

= *Dorylaimus stagnalis apud Khera, 1970 partim*
= *Dorylaimus stagnalis Dujardin, 1845*

Measurements: After Baqri, 1985:

Females (n=1): L = 4.11 mm; a= 33, b= 5.4; c= 15, c'= 5.1; V= 40; amphid aperture = 8-9 µm; odontostyle length = 45 µm; odontophore length = 44 µm; guiding ring from anterior end = 28 µm; nerve ring from anterior end = 172 µm; vaginal depth = 58 µm; prerectum length = 250 µm; rectum length = 64 µm; tail length = 268 µm.

Males (n=1) : L = 3.14 mm; a= 35; b= 4.4 ; c= 90; c'= 0.7; odontostyle length = 46 µm; odontophore length = 48 µm; prerectum length = 318 µm; spicules length = 105 µm; lateral guiding pieces = 14 µm; ventromedian supplements = 42; tail length = 35 µm.

Lip region offset by a depression, about one-fifth of body width at base of pharynx. Labial papillae slightly projecting above lip contour. Amphids stirrup-shaped. Odontostyle about twice lip region width long. Guiding ring "double". Odontophore almost equal to the odontostyle length. Reproductive system amphidelphic. Uterus filled with oval sperms, 4-6 µm long, separated from the oviduct by a sphincter. Vulva longitudinal. Vagina about 45% of corresponding body width deep, surrounded by sphincter, with moderately sclerotized distal region. Tail elongate-conoid, 5.1 anal body-widths long, with four caudal pores on each side.

Male with 42 contiguous ventromedian supplements. The first ventromedian supplement situated at about 2.5 anal body widths from cloacal opening.. Spicules 2.1 anal body-widths long. Tail bluntly rounded, 0.7 anal body width long. Caudal pores 8-12 on each side.

Remarks: Baqri (1985) while making a taxonomic revision of species described by Khera (1970), identified some of the specimens as *L. finalis* Thorne, 1975. These specimens were earlier identified as Dorylaimus stagnalis by Khera

(1970). The presence of 42 ventromedian supplements is unusual for a Laimydorus species.

Distribution: Khera (1970) collected these specimens from the bank of lake, Jodhpur, Rajasthan.

Material examined: No specimen was available for study

Laimydorus baldus Baqri and Jana, 1982

Measurements (After Baqri and Jana, 1982):

Females (n=3): L = 2.11–2.94 mm; a = 34-36; b = 4.8-5.1; c = 10.9-11.8; c' = 7 - 8; V= 43-48; amphid aperture = 6 μm; odontostyle length = 24-25 μm; odontophore length = 29-30 μm; guiding ring from anterior end = 14-15 μm; nerve ring from anterior end = 137-147 μm; cardia length = 18-20 μm; vaginal depth = 22-24 μm; prerectum length = 122-157 μm; rectum length = 40-45 μm; tail length = 190 μm.

Male (n=1)*:* L = 1.83 mm; a = 35; b = 4.3; c = 77; T = 57; odontostyle length = 24 μm; odonophore length = 29 μm; prerectum length = 236 μm; spicules length = 53 μm; lateral guiding pieces = 9 μm; ventromedian supplements = 24; tail length = 22 μm.

Lip region offset by a depression, about one fourth as wide as body-width at the neck base; lips amalgamated. Amphids stirrup-shaped; Odontostyle 1.8-2.0 times lip region-widths long. Guiding ring "double". Odontophore 1.1-1.2 times the odontostyle length. Female reproductive system amphidelphic. Uterus with ''Z'' differentiation at its middle. Vulva a transverse slit. Vagina extending inwards about 35-40%; *pars refrengens vaginae* with two pear-shaped strongly sclerotised pieces. Tail elongate filiform, 190–224 μm or about 7-8 times anal body widths long, with 4-5 caudal pores on each side.

Males with 24 contiguous ventromedians in addition to adanal pair. The first ventromedian supplement situated 3 anal body width from the cloacal opening. Subventral papillae not seen. Spicules about 1.8 times anal body-width long. Prerectum about 12 anal body width long, starts before the supplement region. Tail bluntly rounded, 0.8 anal body width long, with 5-6 caudal pores on each side.

Distribution: Baqri and Jana (1982) described this species from soil samples collected from around the roots of paddy, *Oryza sativa* L. at Chakchaka, district Coochbehar, West Bengal, India. No further record.

Relationships: *L. baldus* resembles *L. gazella* Andrássy, 1970 and *L stenopygus* (Andrássy, 1968) Siddiqi, 1969. It differs from *L. gazella* in having amalgamated lips, lip region marked by a slight depression and narrower than adjoining body, shorter odontostyle, and male with 53 µm long spicules (lips distinct, lip region marked by a constriction and wider than adjoining body, odontostyle 28-29 µm, and male with 58 µm long spicules in *L. gazella*). From *L. stenopygus* in having amalgamated lips, lip region marked by a depression and narrower than adjoining body, differently shaped amphids, and a shorter oesophagus (lips distinct, lip region marked by a constriction and wider than adjoining body, and b = 4.0-4.3 in *L stenopygus*).

Material examined: No specimen was available for study.

Laimydorus simplex (Baqri and Jana, 1982) Loof, 1996

= *Calodorylaimus simplex* Baqri and Jana, 1982
= *L. olifanti* Botha and Heyns, 1991

Measurements (After Baqri and Jana, 1982)

Females (n= 4) **:** L = 2.30-2.57 mm; a = 46-51; b = 5.4; c = 5.7-6.8; c' = 17 –19; V= 45; amphid aperture = 7-8 µm; odontostyle length = 23-27 µm; odontophore length = 30-34 µm; guiding ring from anterior end = 14-16 µm; nerve ring from anterior end = 133-139 µm; cardia length = 16-19 µm; vaginal depth = 24-27 µm; prerectum length = 141-180 µm; rectum length = 37-41 µm; tail length = 357-406 µm.

Males (n= 4): L = 1.79-2.17 mm; a = 37-44; b = 4.2 –4.6; c = 12; c' = 2⁄3-4⁄5 T = 51-60; odontostyle length = 24-27 µm; odonotophore length = 30-32 µm; prerectum length = 226-357 µm; spicule length = 43-46 µm; lateral guiding pieces = 8-9 µm; ventromedian supplements = 20-22; tail length = 17-19 µm.

Lip region rounded, amalgamated, marked by a depression, about one-fourth of body-width at base of oesophagus. Amphid stirrup-shaped. Odontostyle about twice lip region-widths long. Guiding ring "double". Odontophore 1.1-1.2 times the odontostyle length. Female reproductive system amphidelphic. Ovaries reflexed sometimes reaching upto the oviduct-uterus junction. Uterus well differentiated into three distinct zones, proximal part with well developed lumen; middle part with well developed Z-differentiation and gradually narrowing the distal part. Uterus and oviduct separated by a sphincter. Vulva a transverse slit. Vagina extending inward about half of corresponding body width; *pars proximalis vaginae* with straight walls encircled by circular musculature; *pars refringens vaginae* with oval-shaped sclerotisation; a well developed intermediate area visible between two sclerotised pieces; *pars distalis vaginae* short. Tail long filiform, whip-like, 17-19 anal body-widths long, with two caudal pores on each side.

Male with 20-22 ventromedians supplements, the latter arranged in two groups. The first ventromedian supplement situated at about 2.0 anal body-widths from cloacal opening. Spicules 1.75-2.0 anal body-widths long. Prerectum 9-16 anal body-widths long. Tail bluntly rounded, 2/3-4/5 of the anal body width long. Caudal pores not visible.

Relationship: Baqri and Jana (1982) described this species as *Calodorylaimus simplex*. Loof (1996) transferred it to *Laimydorus* while synonymizing the genus *Calodorylaimus* Andrássy, 1969. *Laimydorus simplex, L. indicus* and *L. andrassyi* constitute a group of closely related species but differs in definite taxonomic characters.

Distribution: Baqri and Jana (1982) described this species from soil around the roots of paddy, *Oryza sativa* L., at Balut and Majherpara district Burdwan, West Bengal, India.

Material examined: No specimen was available for study.

Laimydorus kherai Baqri, 1985

= *Eudorylaimus odhneri* partim apud Khera, 1970

Measurements (After Baqri, 1985):

Female (n=1): L = 2.92 mm; a = 45; b = 5.1; c = 12; V = 44; amphid aperture = 7 μm; odontostyle length = 31 μm; odontophore length = 35 μm; guiding ring from anterior end = 18 μm; nerve ring from anterior end = 172 μm; vaginal depth = 30 μm; tail length = 245 μm.

Male (n=1): L = 2.49 mm; a = 50; b = 4.2; c = 12; c' = 0.6; T = 59; odontostyle length = 31 μm; odonophore length = 36 μm; guiding ring from anterior end = 17.5 μm; spicules length = 65 μm; ventromedian supplements = 26.

Lip region almost continuous. Odontostyle about 1.7 times lip region-width long. Guiding ring "double".Odontophore 1.1 times the odontostyle length. Female reproductive system amphidelphic. Vulva a transverse slit. Vagina about half of corresponding body width deep; *pars proximalis vaginae* with straight walls; *pars refrengens vaginae* with two drop-shaped strongly sclerotised pieces. Tail elongate filiform.

Male with a series of 26 contiguous ventromedian supplements. The first ventromedian supplement situated 2.3 anal body width from the cloacal opening. Spicules 2.1 anal body width long. Lateral guiding pieces present. Prerectum about about 12 anal body widths long extending much beyond the range of supplements. Tail bluntly rounded, about 0.65 times anal body-widths long.

Relationship: Baqri (1985) while studying the nematodes described by Khera (1970), proposed this species for some specimens designated as *Eudorylaimus odhneri* by Khera, 1970. *L. kherai* comes close to *L. conurus* (Thorne, 1939) Siddiqi, 1969 and *L. baldus* Baqri & Jana, 1982 but differs from the former in having longer body and odontostyle, more posteriorly situated guiding ring and in having more ventromedian supplements and longer spicules in males (*vs* L = 1.6 mm; odontostyle 19 μm; and guiding ring = 13 μm, ventromedian supplements 21 and spicules 50 μm long). From *L. baldus,* it differs in having longer odontostyle, odontophore and spicules (*vs* odontostyle = 24-25 μm, odontophore = 29-30 μm, and spicules = 53 μm).

Distribution: Collected by Khera (1970) from soil near the banks of stagnant freshwater tank, Surajkund, Lucknow, U.P.

Material examined: No specimen was available for study.

Laimydorus distinctus Dey and Baqri, 1986

Measurements (After Dey and Baqri, 1986)

Female (n=1): L = 6.44 mm; a = 58.5; b = 6.5; c = 24.5; c' = 6.6; V= 47; amphid apertures = 9 μm; odontostyle length = 62 μm; odontophore length = 66 μm; guiding ring from anterior end = 45 μm; nerve ring from anterior end = 298 μm; cardia length = 40 μm; vagina depth = 48 μm; prerectum length = 346 μm; rectum length= 52 μm; tail length = 258 μm.

Males (n=2): L = 5.05 mm; a = 50.5; b = 5.9; c = 180; c'= 0.7; T = 50; odontostyle length = 60 μm; odontophore length = 60 μm; prerectum length = 400 μm; spicules length = 110 μm; lateral guiding pieces = 13 μm; ventromedian supplements = 26; tail length = 28 μm.

Lip region offset by constriction, about one-fifth as wide as body-width at neck base, wider than adjoining body. Amphid stirrup-shaped. Odontostyle about 3.1 times lip region width long. Odontophore slightly longer than the odontostyle. Female reproductive system amphidelphic. Ovaries reflexed; reaching upto the oviduct-uterus junction; oviduct with a clear demarcation of wide *pars dilatata distalis* with distinct lumen and narrower proximal part with prismatic cells. Uterus a long tube, proximal part with well developed lumen narrowing gradually to a distal part with prominent zig-zag folds. Vulva a longitudinal slit. Vagina about 39% of corresponding body width deep; *pars proximalis vaginae* with almost straight walls, encircled by circular musculature; *pars refrengens vaginae* with two drop-shaped strongly sclerotised pieces. Tail elongate, filiform, with rounded tip, about 6.6 anal body-widths long.

Male with 26 contiguous ventromedian supplements. The first ventromedian supplement situated at about two anal body widths from the cloacal opening. Spicules about 2.7 times anal body-width long. Prerectum about 10 times anal body width long. Tail bluntly rounded, 0.7 times anal body-width long, with 5 caudal pores on each side

Relationship: *L. distinctus* is characteristic for its large odontostyle and is close to *L. crassoides* (Jagerskiold,1908) Siddiqi, 1969 in having three lip region widths long odontostyle. However from *L.crassoides* it differs in body dimension (L = 2.8-3.7mm; a =26; b = 4.3; c = 20.6 in *L. crassoides*, after Thorne, 1939). In *L. crassoides*, the lip region is much narrower than adjoining body; tail tip is ventrally bent, hook shaped and there are only fifteen ventromedian supplements.

Distribution: Dey and Baqri (1986) described this species from soil around the roots of paddy, *Qryza sativa* at Baraibari, district Coocbehar, West Bengal, India.

Material examined: No specimen was available for study.

Laimydorus oryzae Dey and Baqri, 1986

Measurements (After Dey and Baqri, 1986)

Females (n=4): L = 3.9-4.4 a = 66-71; b = 7.9-8.5; c = 18.7-26.4; c' = 5.3-8.6; V= 47; amphid apertures = 5-6 μm; odontostyle length = 25-27; odontophore length = 22-25 μm; guiding ring from anterior end = 14-16 μm; nerve ring from anterior end = 132-145 μm; cardia length = 22-25 μm; prerectum length = 339-460 μm; rectum length = 30-37 μm; vaginal depth = 20-22 μm; tail length = 150-260 μm.

Males (n=4): L = 3.5-3.7 mm; a = 60-71; b = 6.9-7.2; c = 175-160; T = 51-53; odontostyle length = 24-26 μm; odontophore length = 30-32 μm; prerectum length = 302-860 μm ; spicules length = 55-59 μm; lateral guiding pieces = 8-10 μm; ventromedian supplements = 18-22; tail length = 18-20 μm.

Lip region offset by constriction, slightly wider than adjoining body, about twice as wide as body width at neck base. Amphid stirrup-shaped. Odontostyle 1.6-1.8 times lip region width long. Guiding ring "double". Odontophore 1.1-1.2 times the odontostyle length. Female reproductive system amphidelphic. Ovaries reflexed; reaching beyond the oviduct-uterus junction. Uterus a well developed long tube with narrow proximal part and wide distal part filled completely with sperms. A well

developed sphincter separates uterus and oviduct. Vulva a longitudinal slit. Vagina about 33-36% of corresponding body width deep; *pars proximalis vaginae* with convex walls, encircled by well developed circular musculature; *pars refrengens vaginae* with two square-shaped strongly sclerotised pieces. Tail elongate, conoid, 5.3 - 8.6 anal body widths long.

Male with 26 contiguous ventromedian supplements. The first ventromedian supplement situated at about 2.5 anal body widths from the cloacal opening. Spicules about two anal body widths long. Prerectum 10.4-12.4 anal body widths long. Tail bluntly conoid, less than one anal body width long, with 2-3 caudal pores on each side

Relationship: *Laimydorus oryzae* resembles *Laimydorus pseudostagnalis* (Micoletzky, 1927) Siddiqi, 1969; *L. stenopygus* (Andrássy, 1968) Siddiqi 1969 and *L. cryptosperma* (Loof, 1969) Baqri and Coomans, 1973 in having a well offset lip region and 1.6-1.8 times lip region widths long odontostyle. From *L. pseudostagnalis* it differs in having normal size of labial papillae and shorter female tail; lesser no of ventromedian supplements in male (labial papillae well developed modifying the shape of the lip; c = 13 in female and male with 25 ventromedian supplements in *L. pseudostagnalis*). From *L. stenopygus* it differs in having a longer and thinner body; shorter tail in female and more no of ventromedian supplements in male (L = 1.9-2.2, a = 33-38, c = 11.1- 11.5 amd male with 28-29 ventromedian supplements in *L. stenopygus*). It is longer and thinner than *L. cryptosperma*, with shorter tail (L = 1.9-2.3 mm, a = 28-38 and c = 10-12 in *L. cryptosperma*).

Distribution: Dey and Baqri (1986) described this species from soil around roots of paddy, *Qryza sativa* at Salbari, district Darjeeling, West Bengal, India.

Material examined: No specimen was available for study.

Laimydorus coomansi Baqri, 1991

Measurements (After Baqri, 1991)

Females (n=2): L = 3.16-3.25 mm; a = 40-43; b = 4.3-4.6; c = 12.8-13; c' = 9; V= 42-43; amphid aperture = 10 µm; odontostyle length = 38-40 µm; odontophore length = 44-45 µm; guiding ring from anterior end = 24 µm; nerve ring from anterior end = 200-211 µm; prerectum length = 175-185 µm; rectum length = 41-48 µm; tail length = 241-252 µm.

Male (n=1): L = 3.31 mm; a =37; b = 4.5; c = 10.5; T = 37; odontostyle length = 37 µm; odontophore length = 44 µm; guiding ring from anterior end = 24 µm; prerectum length = 487 µm; spicules length = 67 µm; lateral guiding pieces = 10 µm; ventromedian supplements = 27; tail length = 30 µm.

Lip region off set by a slight constriction, about one-third as wide as body-width at neck base. Amphid stirrup-shaped. Odontostyle about twice lip region width long. Guiding ring "double". Odontophore slightly more than one odontostyle length. Female reproductive system amphidelphic. Uterus about five times longer than oviduct, the former partly glandular and partly muscular. Sphincter present at oviduct-uterus junction. Vulva longitudinal. Tail elongate conoid, about nine times anal body width long, with three to four caudal pores on each side.

Male with 27 contiguous ventromedian supplements. Prerectum about 12 anal body widths long, extending much beyond the supplements. Tail convex conoid with rounded terminus, about 0.8 times anal body width long.

Relationship: *Laimydorus coomansi* Baqri, 1991 is close to *L. finalis* Thorne, 1975 and *L. baldus* Baqri and Jana, 1982. From the former it differes in having shorter odontostyle, anteriorly situated guiding ring and higher neck length (*vs* Odontostyle = 45-46 µm, guiding ring = 28 µm and b = 5.1-5.4). From *L. baldus* it

differs in having shorter body, shorter odontostyle and odontophore and long spicules (*vs* L = 21-2.3 mm; odontostyle = 24-25 µm; odontophore = 29-30 µm; spicules = 53 µm).

Distribution: Baqri (1991) described this species from soil around roots of citrus at Tarku, South Sikkim, India.

Material examined: No specimen was available for study.

Laimydorus minimus Baqri, 1991

Measurements (After Baqri, 1991):

Females (n=5): L = 1.30-1.49 mm; a = 34-36; b = 3.4-3.7; c = 8.9-9.6; c' = 6.1-7.5; V = 49-52; amphid aperture = 9-10 µm; odontostyle length = 33-38 µm; odontophore length = 28-35 µm; guiding ring from anterior end = 19.0-20.5 µm; nerve ring from anterior end = 132-147 µm; vagina depth = 19-22 µm; prerectum length = 80-96 µm; rectum length = 30-40 µm; tail length = 143-180 µm.

Male: Not known

Lip region offset by slight depression, about one-third as wide as body-width at neck base. Amphids stirrup-shaped. Odontostyle 2.3-2.7 times lip region width long. Guiding ring "double". Odontophore 0.8-0.9 times the odontostyle length. Female reproductive system amphidelphic. Ovaries reflexed; oviduct with a clear demarcation of *pars dilatata distalis* with distinct lumen and proximal part with prismatic cells. Uterus a long, wide tube, proximal part with well developed lumen and distal part with prominent zig-zag folds. The uterus and oviduct are separated by a sphincter. Vulva longitudinal. Vagina thick-walled, extending inwards about half of corresponding body-width; *pars proximalis vaginae* with convex walls, encircled by circular musculature; *pars refrengens vaginae* with two triangular strongly sclerotised

pieces, the middle one weakly sclerotised. Tail elongate, tapering gradually with sharp acute terminus, about 6.1-7.5 times anal body-widths long.

Relationship: *Laimydorus minimus* Baqri, 1991 close to *L. siddiqii* Baqri and Jana, 1982 but differs in having smaller body and odontostyle, odontophore smaller than odontostyle, wider and differently shaped amphids and tail tip sharper and narrower (*vs* L = 1.9-2.7 mm; odontostyle = 29-31; odontophore longer longer than odontostyle; amphidial apertures occupying 54-60% of the corresponding body-width and tail tip rounded in *L. siddiqii*).

Distribution: Baqri (1991) described this species from soil around the roots of citrus at Tarku and Mangro Basti, Khumdong and Phangla, Sikkim, India.

Material examined: No specimen was available for study.

Laimydorus wasimi (Bohra and Baqri, 2003) Comb. N.

=Calodorylaimus wasimi Bohra & Baqri, 2003

Measurements: (After Baqri and Bohra, 2003)

Female (n=2) : L = 1.6-1.7 mm; body width at anus = 19 µm; a = 31-33; b = 4.6-4.8; c = 9.6-10.8; c'= 8.2-9.4; V = 45-46; G_1 = 16.1-16.5; G_2 = 16.1-16.5; lip region width = 9 µm; lip region height = 5 µm; amphid aperture = 5 µm; odontostyle length = 20-23 µm; odontophore length = 24-26 µm; guiding ring from anterior end =13 µm; expanded part of pharynx = 150-160 µm; nerve ring from anterior end = 130-137 µm; neck length = 300-365 µm; vaginal depth = 18-19 µm; prerectum length = 85-86 µm; rectum length = 32µm; tail length = 156-180 µm.

Male (n=2) : L = 1.3-1.4 mm; body width at cloaca = 20-21 µm ; a =31-33; b = 4.0-4.7; c = 67-68 ; c' = 1.0; T = 55; lip region width = 9 µm ; lip region height = 5 µm; amphid aperture = 5 µm; odontostyle length = 22-23 µm; odontophore length = 24-25 µm; guiding ring from anterior end = 13 µm; expanded part of pharynx = 136-140 µm; nerve ring from anterior end = 132-138 µm; neck length = 336-340 µm; spicules length = 38 µm; lateral guiding pieces = 7-8 µm; ventromedian supplements = 19; tail length = 20-21 µm.

Lip region narrower than body, marked by depression, flat at apex. Amphids stirrup-shaped. Odontostyle 2.2-2.4 times lip region widths long. Guiding ring "double". Odontophore about 1.0-1.2 times the odontostyle length. Female genital system amphidelphic. Proximal part of uterus with well developed Z-differentiation. Ovaries long, reflexed, reaching almost upto the oviduct-uterus junction. Vulva a transverse slit, located in a depression. *Pars refringens vaginae* with two drop-shaped sclerotized pieces in lateral view. Tail elongate, filiform, 8.2-9.4 times anal body-widths long.

Male with ventromedian supplements arranged in two groups, always two spaced supplements in between, 7+2+9-9+2+8. Spicules 1.8 times anal body widths long. Prerectum about 9.7-9.8 anal body widths long, starting well before the range of supplements. Tail rounded, conoid, about one anal body-width long. Caudal pores two to three on each side.

Relationships: *Laimydorus wasimi* is characteristed by a rounde lip region marked by a depression; 20-23 µm long odontostyle; 24-26 µm long odontophore; Z-organs in uteri; 36-38 µm long spicules; two groups of ventromedian supplements separated by two spaced supplements (7+2+9-9+2+8). It is closely related to *Laimydorus gravidus* Andrássy, 1986 but differs in having longer odontostyle; Z-organ in uteri; longer prerectum in females; shorter spicules. From *L. indicus* (Ahmad and Jairajpuri, 1982) Loof, 1996 it differs in having short body, odontostyle, odontophore, female tail, shorter spicules and distinct post anal bulging in male tail.

Distribution: Baqri and Bohra (2003) described this species from soil around the roots of gram (*Phaseolus sp.*) from Bansada, Navasari district, Gujarat state, India

Material examined: No specimen was available for study.

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FIGURES

Fig 1. *Laimydorus conurus* (Thorne, 1939) Siddiqi, 1969

A. Entire female
B. Entire male
C. Anterior region showing amphid
D. Anterior region
E. Expanded part of pharynx
F. Female genital branch (Posterior)
G. Vulval region
H. Female posterior region
I. Female posterior end
J. Male posterior region

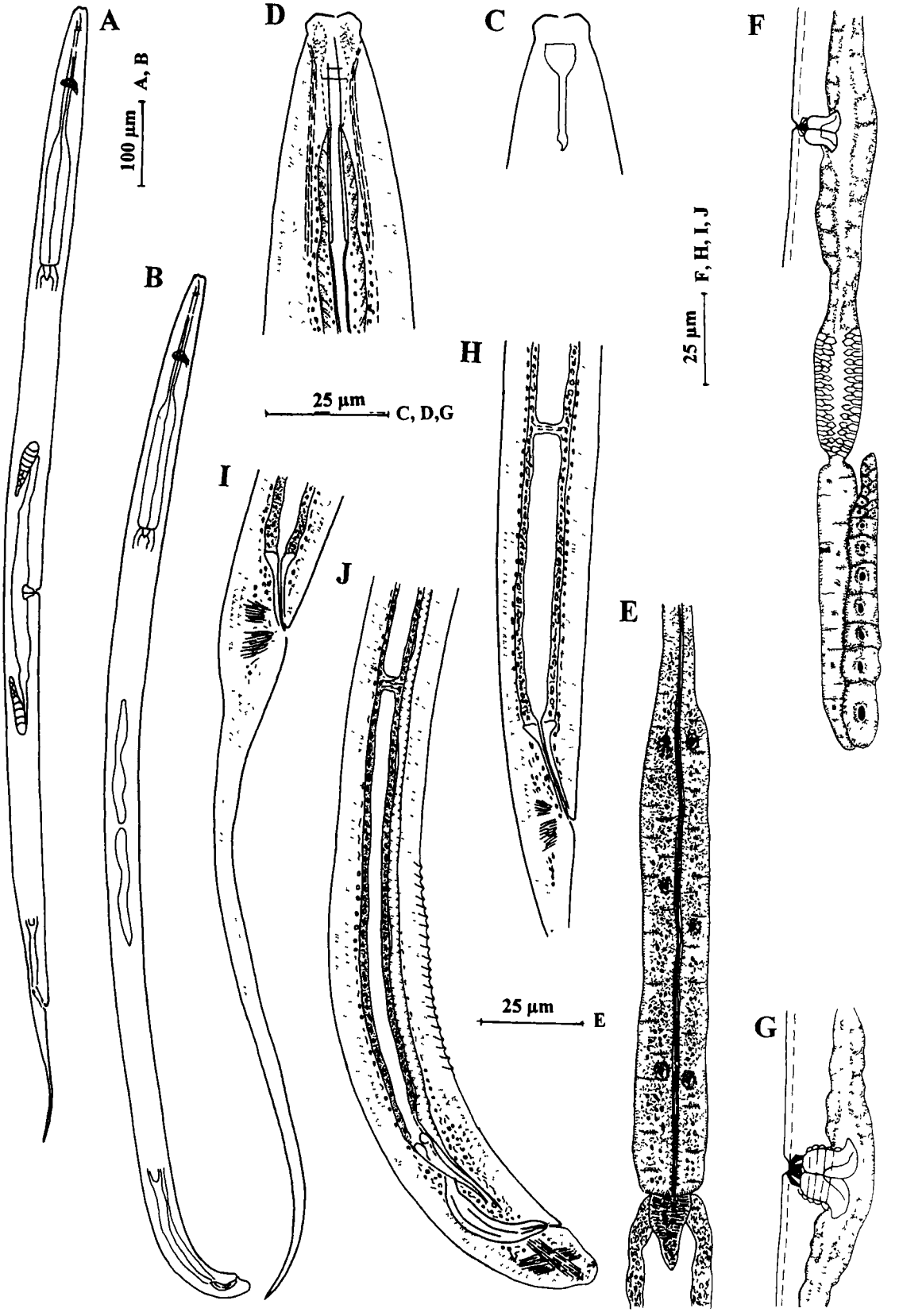
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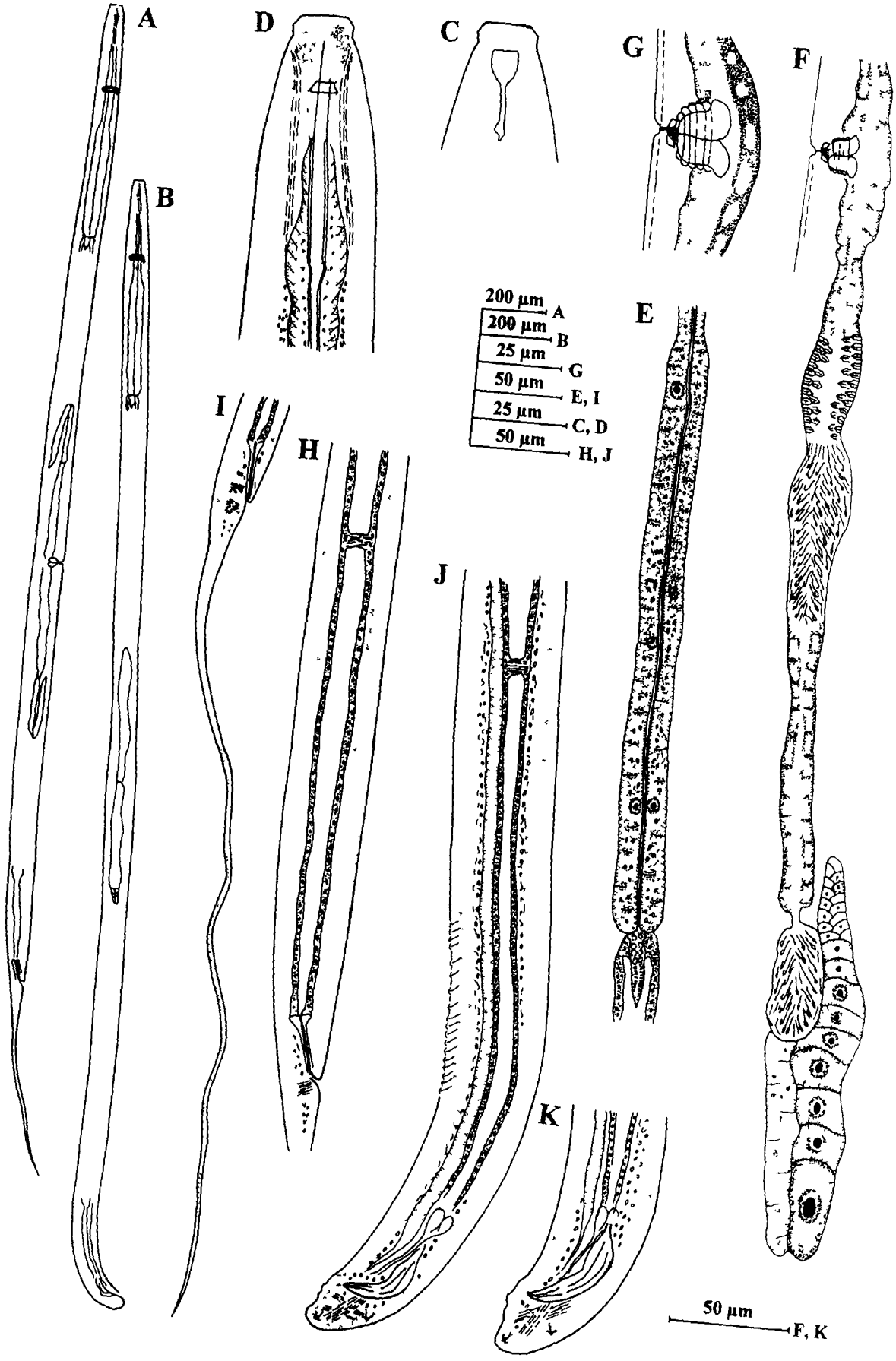
Fig 2. *Laimydorus andrassyi* (Baqri and Jana, 1982) Loof, 1996

A. Entire female
B. Entire male
C. Anterior region showing amphid
D. Anterior region
E. Expanded part of pharynx
F. Female genital branch (Posterior)
G. Vulval region
H. Female posterior region
I. Female posterior end
J. Male posterior region
K. Male posterior end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F, K

Fig 3. *Laimydorus siddiqii* Baqri and Jana, 1982

A. Entire female

B. Entire male

C. Anterior region showing amphid

D. Anterior region

E. Expanded part of pharynx

F. Female genital branch (Posterior)

G. Vulval region

H. Female posterior region

I. Female posterior end

J. Male posterior region

K. Male posterior end

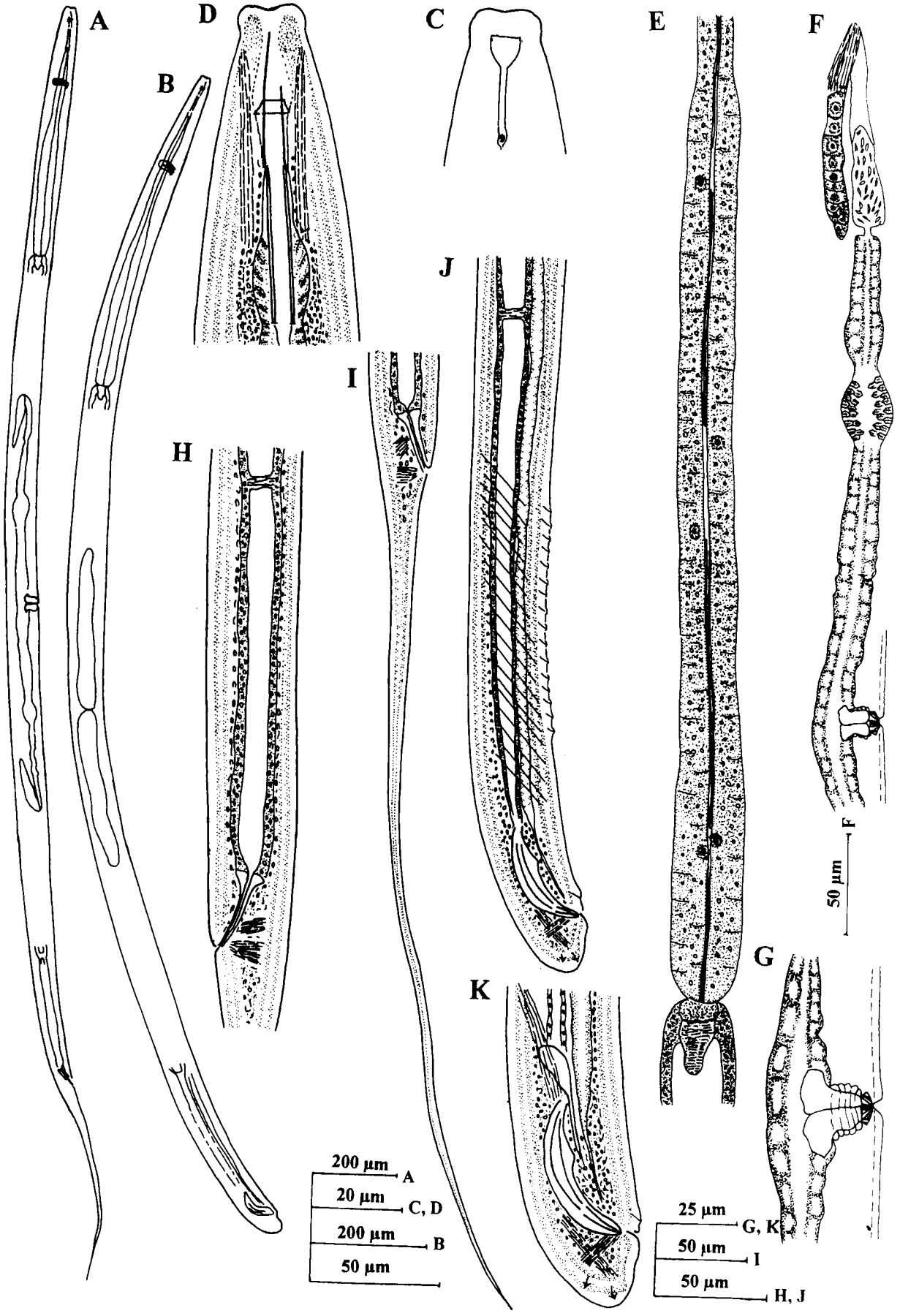
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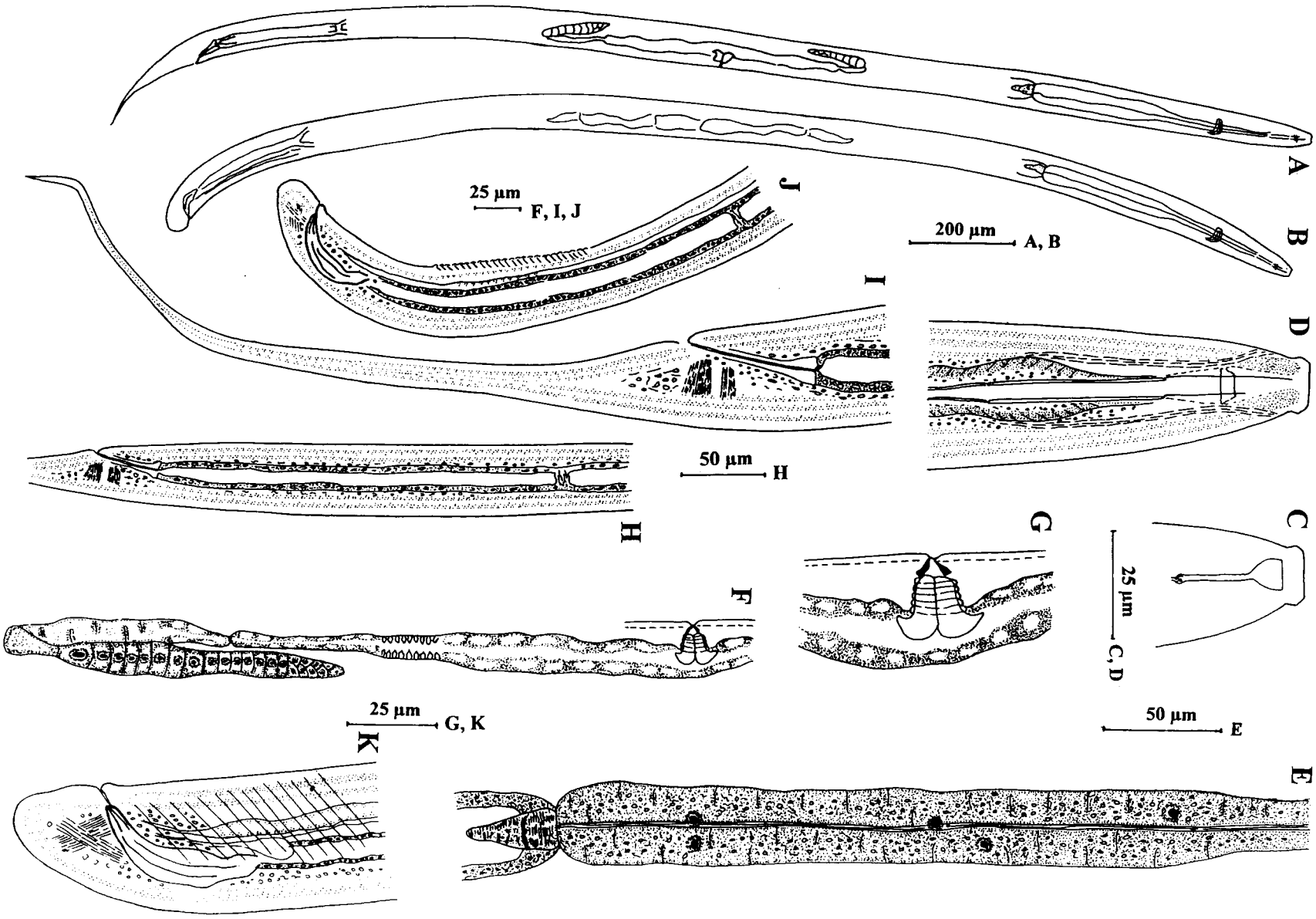
Fig 4. *Laimydorus uterinus* Loof, 1996

A. Entire female
B. Entire male
C. Anterior region showing amphid
D. Anterior region
E. Expanded part of pharynx
F. Female genital branch (Posterior)
G. Vulval region
H. Female posterior region
I. Female posterior end
J. Male posterior region
K. Male posterior end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K
E

Fig 5. *Laimydorus macrostylus* Ahmad and Ahmad, 2002

A. Entire female

B. Entire male

C. Anterior region showing amphid

D. Anterior region

E. Expanded part of pharynx

F. Female genital branch (Posterior)

G. Vulval region

H. Female posterior region

I. Female posterior end

J. Male posterior region

A
B
C
D
E
F
G
H
I
J
200 µm
A, B
25 µm
C, D
25 µm
E, H
50 µm
F, I
25 µm
G
50 µm
J

Fig 6. *Laimydorus mangalorensis* Ahmad and Ahmad, 2002

A. Entire female
B. Entire male
C. Anterior region showing amphid
D. Anterior region
E. Expanded part of pharynx
F. Female genital branch (Posterior)
G. Female posterior region
H. Female posterior end
I. Male posterior region

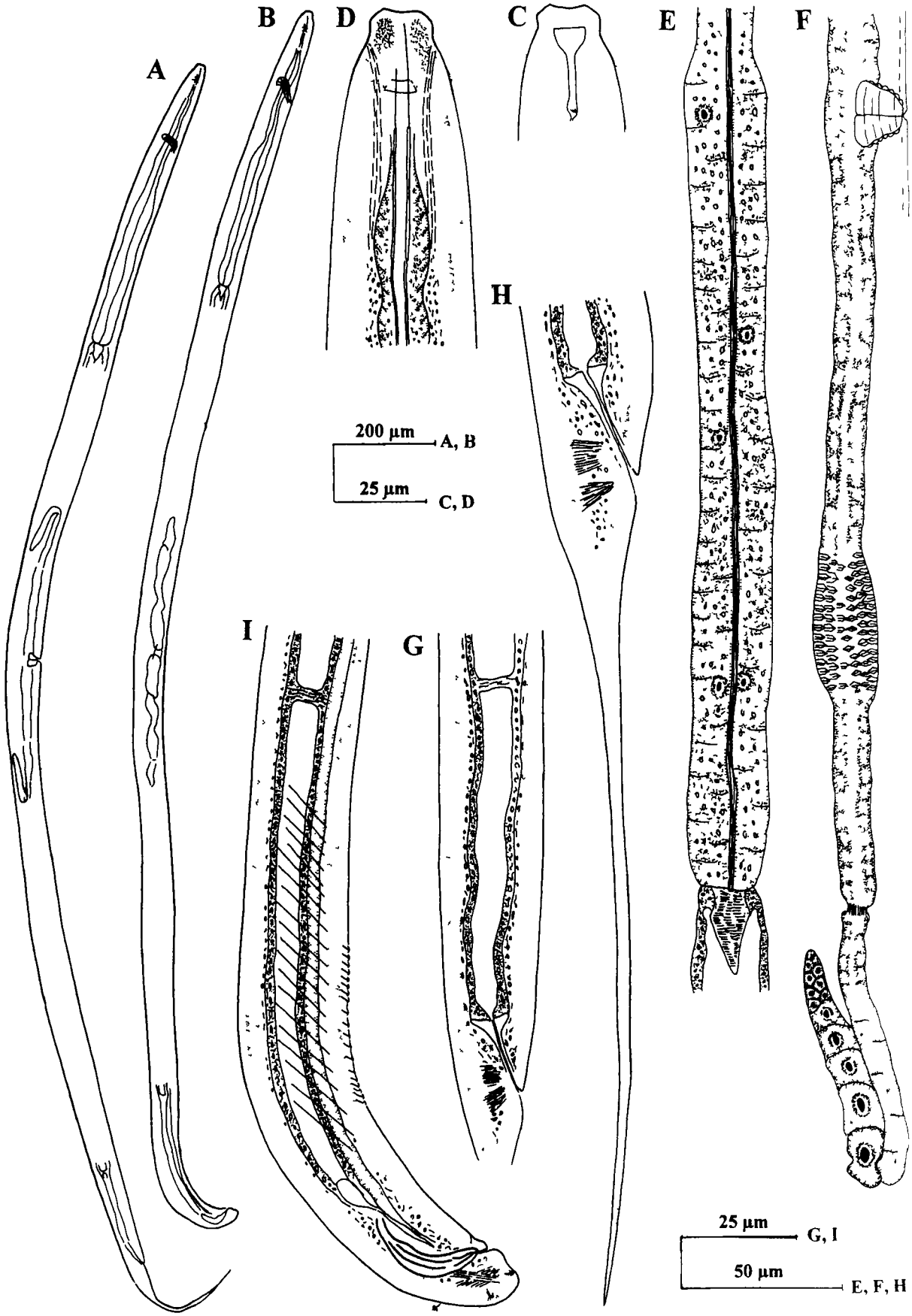

A
B
D
C
E
F
H
I
G
200 µm
A, B
25 µm
C, D
25 µm
G, I
50 µm
E, F, H

Fig7. *Laimydorus cardiacus* Baniyamuddin and Ahmad, 2006

A Entire female

B. Anterior region showing amphid

C. Anterior region

D. Expanded part of pharynx

E. Female genital branch (Posterior)

F. Vulval region

G. Female posterior region

H. Female posterior end

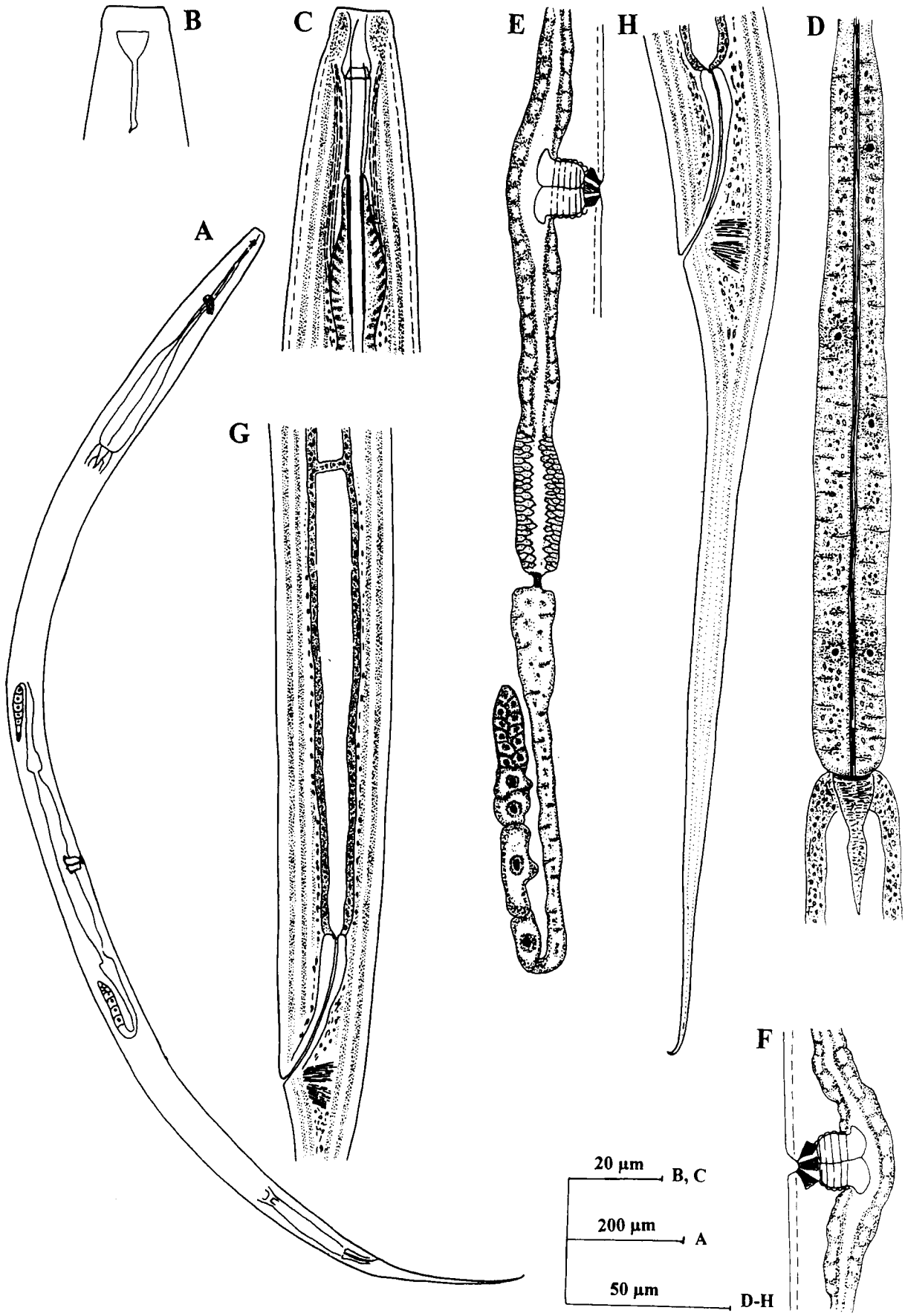

B
C
E
H
D
A
G
F
20 µm
B, C
200 µm
A
50 µm
D-H

Fig 8. *Laimydorus parapapillatus* Mushtaq and Ahmad, 2006

A. Entire female

B. Entire male

C. Anterior region showing amphid

D. Anterior region

E. Expanded part of pharynx

F. Female genital branch (Posterior)

G. Vulval region

H. Female posterior region

I. Female posterior end

J. Male posterior region

K. Male posterior end

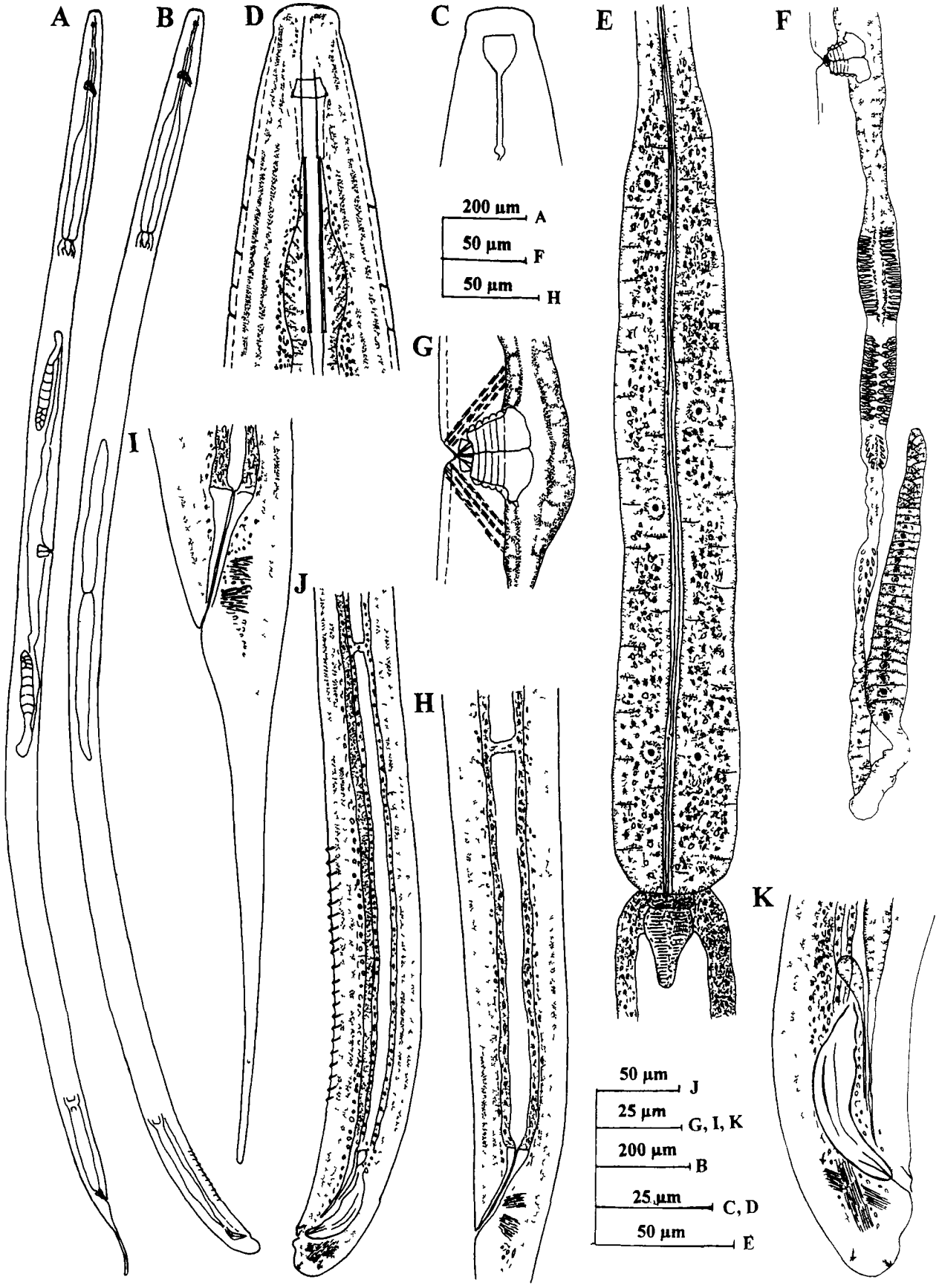

A
B
D
C
E
F
200 µm
A
50 µm
F
50 µm
H
G
I
J
H
K
50 µm
J
25 µm
G, I, K
200 µm
B
25 µm
C, D
50 µm
E

Fig 9. *Laimydorus bomdillaensis* sp.n.

A. Entire female

B. Anterior region showing amphid

C. Anterior region

D. Expanded part of pharynx

E. Pharyngo-intestinal junction

F. Female genital branch (Posterior)

G. Vulval region

H. Female posterior region

I. Female posterior end

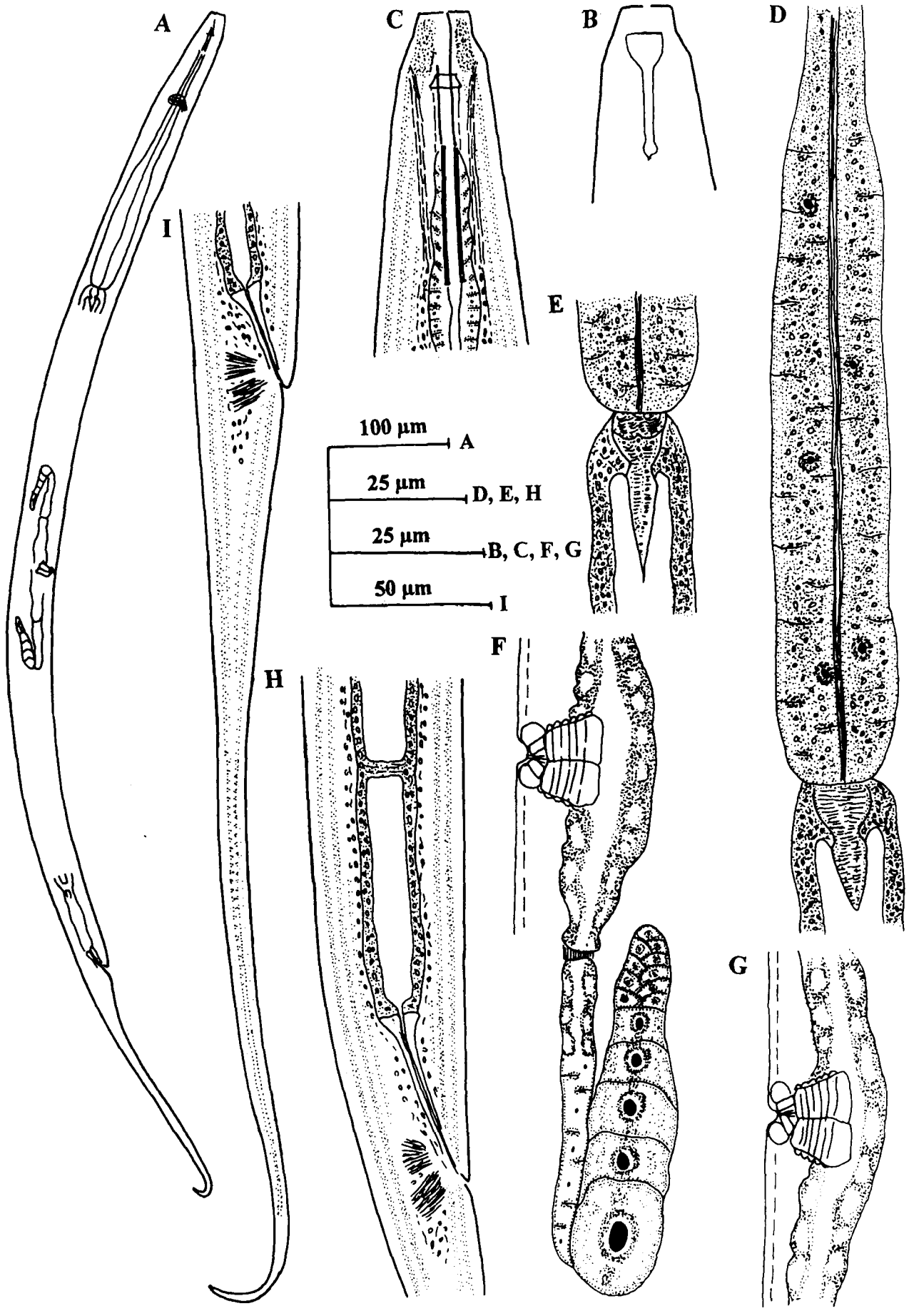

A
C
B
D
I
E
100 µm
A
25 µm
D, E, H
25 µm
B, C, F, G
50 µm
I
H
F
G

Fig 10. ***Laimydorus paraconurus*** **sp.n.**

A. Entire female

B. Entire male

C. Anterior region showing amphid

D. Anterior region

E. Expanded part of pharynx

F. Pharyngo-intestinal junction

G. Female genital branch (Posterior)

H. Vulval region

I. Female posterior region

J. Female posterior end

K. Male posterior region

L. Male posterior end

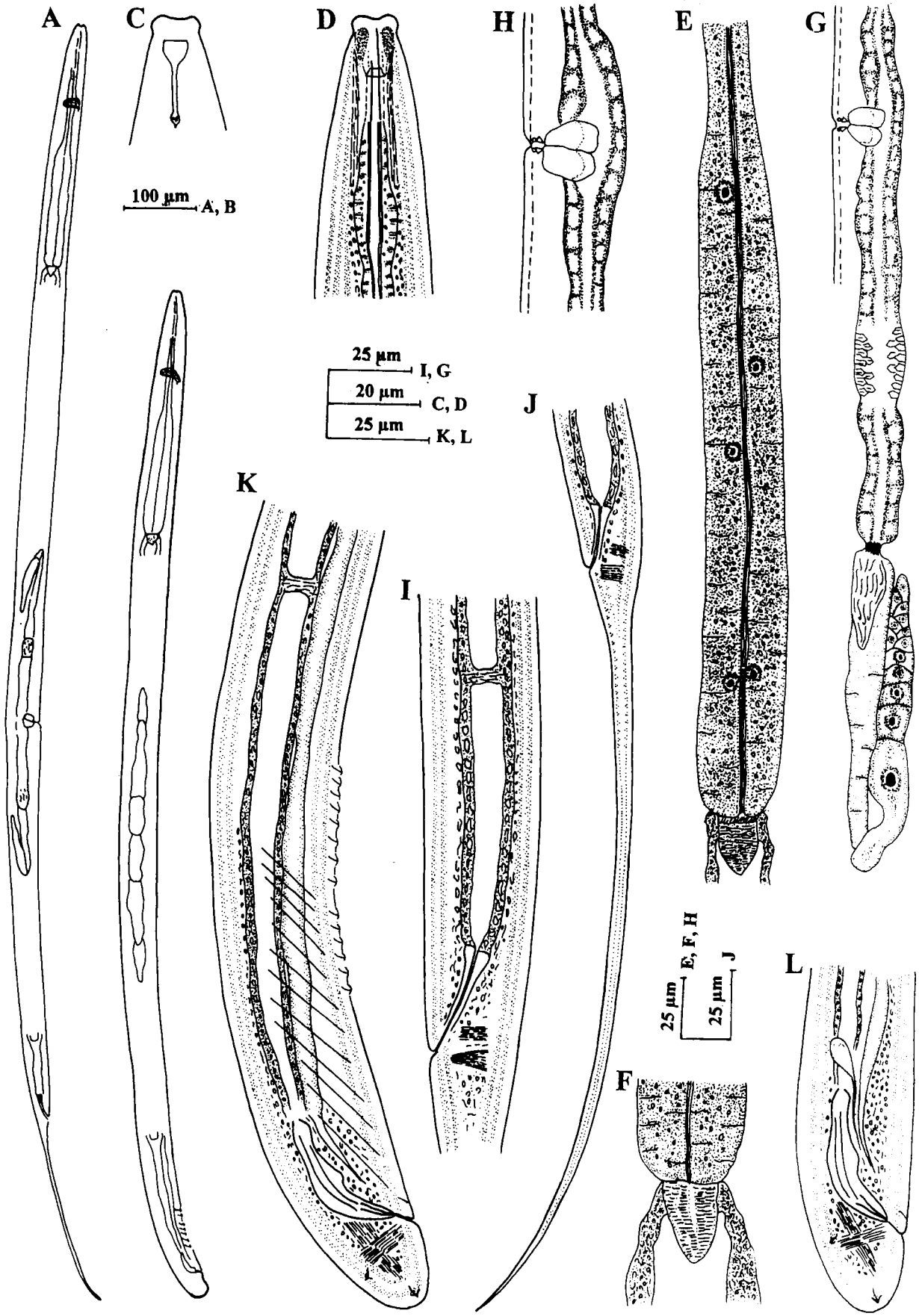

A
C
D
H
E
G
100 µm
A, B
25 µm
I, G
20 µm
C, D
25 µm
K, L
J
K
I
E, F, H
25 µm
J
25 µm
F
L

Fig. 11 ***Laimydorus indicus*** **(Ahmad and Jairajpuri, 1982) Loof, 1996**

A. Anterior region

B. Vulval region

C. Female posterior region

D. Male posterior region

Laimydorus dhanachandi **Jairajpuri and Ahmad, 1983**

E. Anterior region

F. Vulva ventral

G. Female genital branch (Posterior)

H. Junction of intestine and pre-rectum

I. Female posterior region

J. Male posterior region

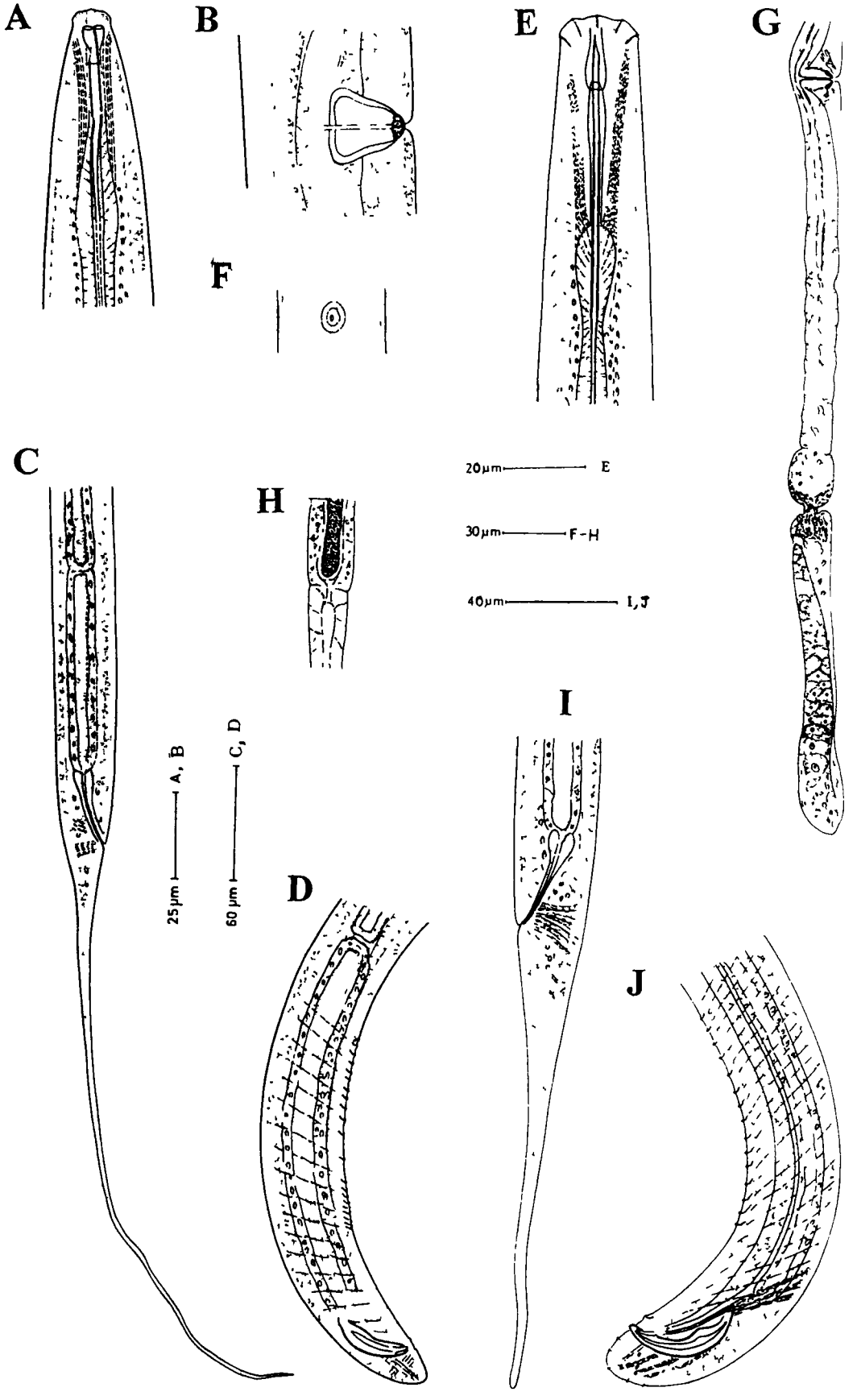

A
B
E
G
F
C
H
20µm E
30µm F-H
40µm I, J
A, B
25µm
C, D
60µm
I
D
J

Fig. 12 *Laimydorus multialaeus* (Khera, 1970) Baqri, 1985

A. Anterior region

B. Female genital branch (Posterior)

C. Female posterior end

D. Male posterior region

***Laimydorus papillatus* Ahmad and Ahmad, 2002**

E. Anterior region

F. Fmale genital branch (Posterior)

G. Female posterior end

H. Male posterior region

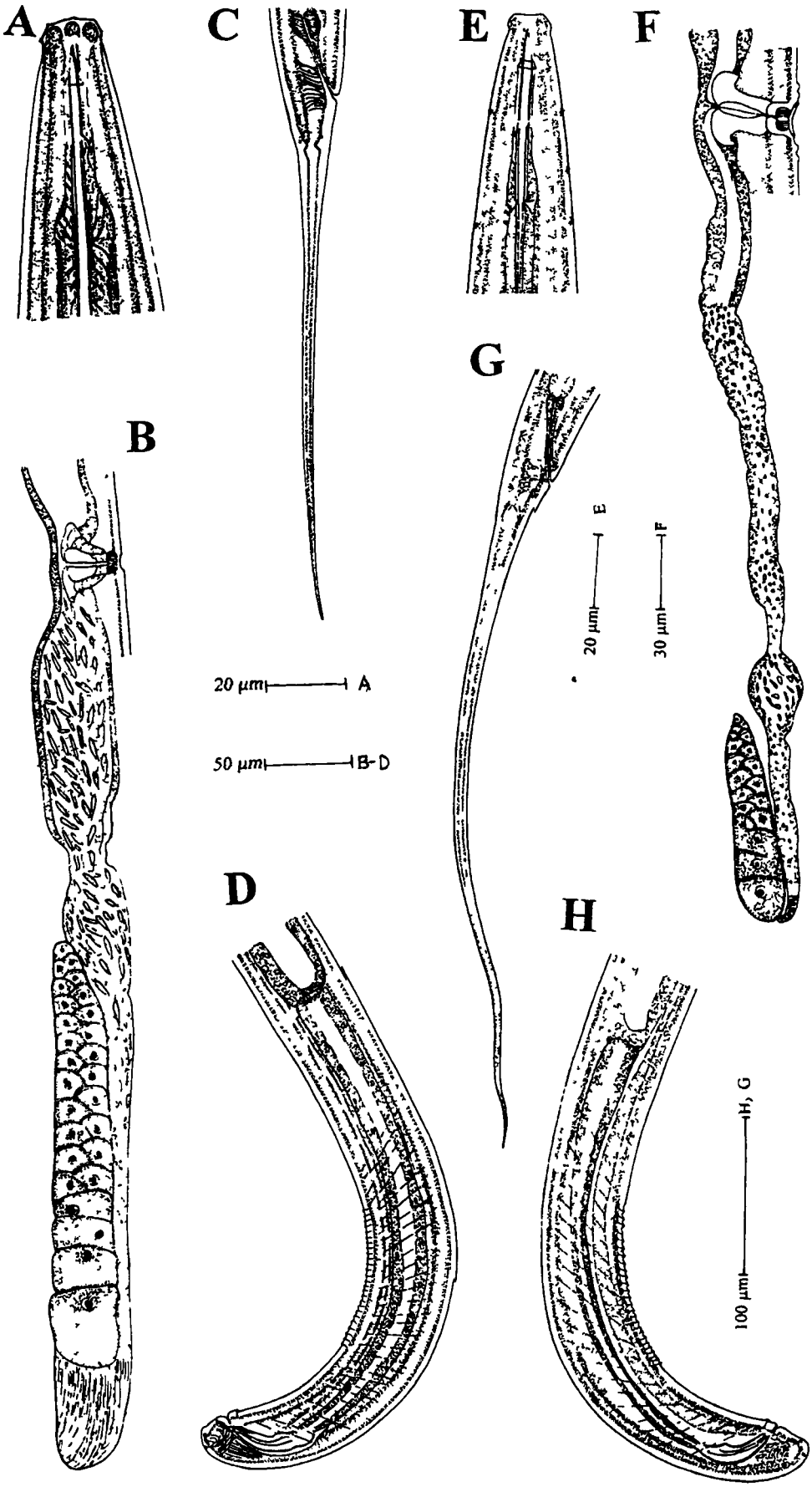

A
C
E
F
B
G
20 µm
A
50 µm
B-D
20 µm
E
30 µm
F
D
H
H, G
100 µm

Fig. 13 *Laimydorus vulvapapillatus* Mushtaq and Ahmad, 2006

A. Anterior region

B. Vulval region

C. Vulval region

D. Female posterior end

E. Male posterior region

***Laimydorus vulvastriatus* Baniyamuddin and Ahmad, 2006**

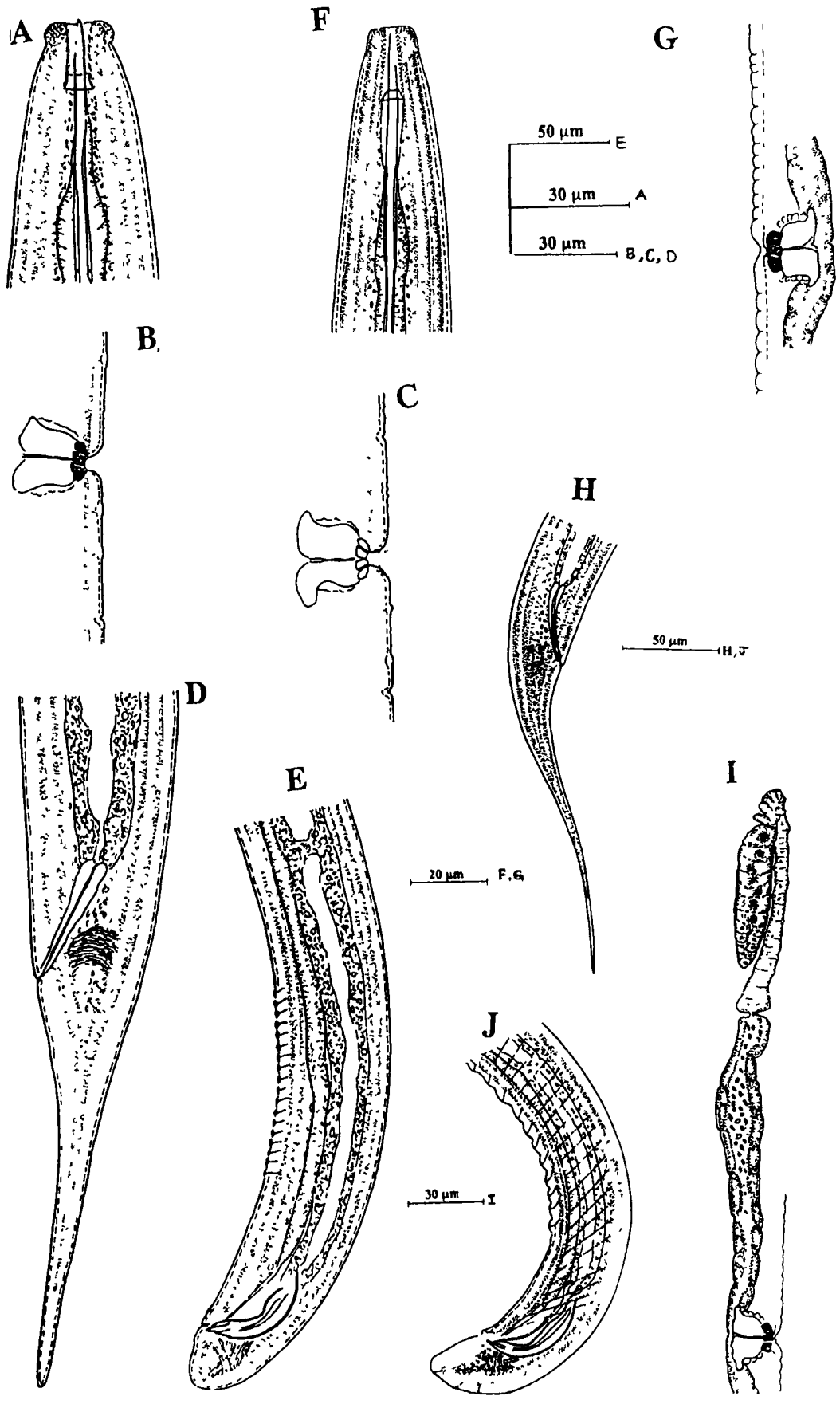
F. Anterior region

G. Vulval region

H. Female posterior end

I. Female posterior end

J. Male posterior region


A
F
G
50 µm
E
30 µm
A
30 µm
B, C, D
B
C
H
50 µm
H, J
D
E
20 µm
F, G
I
J
30 µm
I